



**THE
FOURTEENTH
LACUS
FORUM
1987**



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LACUS FORUM

1987

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THE FOURTEENTH LACUS FORUM 1987

edited by
Sheila Embleton



LINGUISTIC ASSOCIATION OF CANADA AND THE UNITED STATES
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CONTENTS

Introduction	ix
I. Special Lectures	1
1987 Presidential Address	3
<i>Allen Walker Read</i>	
A PERSONAL JOURNEY THROUGH LINGUISTICS	5
Inaugural Address	19
<i>Michael Gregory</i>	
WHY DON'T MORE LINGUISTS RECOGNIZE THAT PEOPLE KNOW WHAT THEY'RE TALKING ABOUT?	21
Invited Lecture	41
<i>Mary Ritchie Key</i>	
THE COCKROACH SYNDROME: PHONOLOGICAL AND SEMANTIC STABILITY THROUGHOUT THE MILLENNIA	43
Winner of 1987 Presidents' Prize	65
<i>Senko K. Maynard</i>	
PRAGMATICS OF INTERACTIONAL SIGNS: A CASE OF UH-HUH'S AND THE LIKE IN JAPANESE CONVERSATION	67
II. General Linguistics	77
1. <i>William M. Christie</i>	
STRATAL DIVISIONS AND NON-EXHAUSTIVE ANALYSIS	79
2. <i>Toby D. Griffen</i>	
CYMRIC LANGUAGE AND LOGIC	88
3. <i>Alan K. Melby</i>	
STATUTORY ANALYSIS	97
4. <i>Janine Schulz</i>	
PHYSICALISM VS. FUNCTIONALISM AND 'COGNITION' VS. 'INTERACTION': A COMPARISON OF CHOMSKY'S AND HALLIDAY'S THEORIES OF LANGUAGE	111
III. Phonology	121
5. <i>Victor Boucher</i> (Winner of Presidents' Commendation)	
FOR A PHONOLOGY WITHOUT "RULES": PERIPHERAL TIMING-STRUCTURES AND ALLOPHONIC PATTERNS IN FRENCH AND ENGLISH	123
6. <i>Axel Koberne</i>	
AUDITORY JUDGEMENT OF INTONATION PATTERNS	141
7. <i>Julius Nyikos</i>	
A LINGUISTIC PERSPECTIVE OF FUNCTIONAL ILLITERACY	146

IV. Morphology	165
8. <i>Michael Eric Bennett†</i> <i>IN MEMORIAM</i>	167
9. <i>David G. Lockwood</i> GENDER CLASSIFICATION IN RELATION TO SEMIOLOGICAL AND INFLECTIONAL CLASSES IN A STRATIFICATIONAL MODEL	170
V. Semantics	181
10. <i>Minoji Akomoto</i> IDIOMATICITY AND PASSIVISATION	183
11. <i>Ulf Bäcklund</i> ANALYSIS AND SYNTHESIS: A STUDY OF WAY AND MANNER	189
12. <i>Patrick Duffley</i> ARE THE MODAL AUXILIARIES PRESENT SUBJUNCTIVES?	221
13. <i>Walter Hirtle</i> STATIVE VS. DYNAMIC: WHAT DO THEY DISTINGUISH?	228
VI. Discourse and Literary Studies	235
14. <i>Linda Laube Barnes</i> ARTICLE VARIABILITY IN WRITTEN ENGLISH	237
15. <i>James E. Copeland</i> COMPARISONS OF SIMILARITY IN TARAHUMARA	248
16. <i>Gordon Fulton</i> GRAMMARS OF GENDER IN <i>CLARISSA</i>	261
17. <i>Robert A. Hall, Jr.</i> MISCONCEPTIONS OF LANGUAGE IN CURRENT LITERARY CRITICISM	269
18. <i>Michael P. Jordan</i> RELATIONAL PROPOSITIONS WITHIN THE CLAUSE	278
19. <i>Greta D. Little and Kimberly G. Johnson</i> PUNCTUATION IN THE TWENTIETH CENTURY	289
20. <i>Karen Malcolm</i> WOOLF'S DESCRIPTIVE STYLE	299
21. <i>Gary D. Prideaux</i> DISCOURSE INFLUENCES ON THE SYNTAX OF ORDERED EVENTS: EVIDENCE FROM TEXTS	309
22. <i>Joan Neuburger Savitt</i> LEARNING TO SELL: AN EXERCISE IN LINGUISTIC REEDUCATION	318
VII. History of Linguistics	327
23. <i>John D. Bengtson</i> BEYOND WHITNEY'S "TENTH LECTURE": NEW HORIZONS IN COMPARATIVE LINGUISTICS	329
24. <i>Konrad Koerner</i> TOWARD A HISTORY OF AMERICANIST LINGUISTICS	336

VIII. Historical Linguistics	345
25. <i>Janet Duthie Collins</i> A THEORY FOR LANGUAGE CHANGE: BARNETT'S THEORY OF CULTURAL CHANGE	347
26. <i>Louise Dagenais</i> AMORCE DE LA NEUTRALISATION DES O À LA FINALE ABSOLUE ET PRODUIT DE LA MONOPHTONGAISON D'(E)AU	364
27. <i>Carleton T. Hodge</i> LATERAL DRIFT	373
28. <i>Richard Nielsen</i> NEW LINGUISTIC AND RUNIC EVIDENCE WHICH SUPPORTS HALL'S THESIS THAT THE KENSINGTON RUNESTONE IS GENUINE	378
29. <i>Angela Della Volpe</i> (Winner of Presidents' Commendation) LATIN <i>URUUS</i> : AN EXERCISE IN HISTORICAL SEMANTICS AND WORD-FORMATION	396
30. <i>Saul Levin</i> A CAMEL OR A CABLE THROUGH A NEEDLE'S EYE?	406
31. <i>J. P. Maher</i> THE 'EYE' OF THE NEEDLE IN PREHISTORIC RELIGION AND MEDICINE: WÖRTER UND SACHEN	416
IX. Sociolinguistics	431
32. <i>Marcel Danesi</i> <i>PUBILECT</i> : OBSERVATIONS ON NORTH AMERICAN TEEN-AGER TALK	433
33. <i>Connie C. Eble</i> SLANG AS POETRY	442
34. <i>William J. Sullivan</i> SOCIOLINGUISTIC RULES AND DYNAMICITY: INSIGHTS FROM POLISH MODES OF ADDRESS	446
X. Language Acquisition	453
35. <i>Robert J. Di Pietro</i> STRATEGIC DISCOURSE AND L2 ACQUISITION	455
36. <i>Cynthia F. Meyer, Barbara A. Paskay, and William C. Spruiell</i> AN ANALYSIS OF CHILD LANGUAGE AS A TEST OF THE SYSTEMIC THEORY OF CIRCUMSTANTIALS	467
37. <i>Peter A. Reich</i> THE LANGUAGE LEARNABILITY THEOREM REVISITED	478
38. <i>Valerie J. Wallace</i> METALINGUISTIC AWARENESS: THE SHADOW OF LANGUAGE	485
XI. Human Linguistics	495
39. <i>Elizabeth Conlon</i> METAPHOR: A HUMAN LINGUISTICS APPROACH	497
40. <i>Deborah L. Gillaspie</i> HUMAN LINGUISTICS AND THE LAW OF CONTRACTS	501
41. <i>Zixin Jiang</i> 'RALPH' – A COMPUTER MODEL SIMULATING A COMMUNICATING INDIVIDUAL	511

42.	<i>Laura L. Koenig</i>		
	A HUMAN LINGUISTICS ACCOUNT OF THE GERMAN PRONOMINAL SYSTEM		521
43.	<i>Ligang Li</i>		
	HOW PEOPLE UNDERSTAND ENGLISH PRONOUNS: A HUMAN LINGUISTIC APPROACH		526
44.	<i>Victor H. Yngve</i>		
	CONTEXT, DEIXIS, AND ANAPHORA IN HUMAN LINGUISTICS		535
XII.	Computational Linguistics		545
45.	<i>Chang-in Lee</i>		
	A GENERAL LINGUISTIC AUTOMATIC SYSTEM -- ILLUSTRATED WITH KOREAN AND ENGLISH		547
46.	<i>Sebastian Shaumyan</i>		
	SEMIOTICS, LINGUISTICS, AND COMPUTER LANGUAGES		563

INTRODUCTION

The Fourteenth Forum of the Linguistic Association of Canada and the United States (LACUS) was held at York University in Toronto from August 4 to August 8, 1987. This is the third time that LACUS has met in Toronto; the Second Forum was held at the University of Toronto in 1975, and the Eighth Forum at Glendon College of York University in 1981.

I have placed Allen Walker Read's Presidential Address, "A Personal Journey Through Linguistics", at the beginning of the volume. This is followed by the Inaugural Lecture, Michael Gregory's "Why Don't More Linguists Recognize that People Know What They're Talking About", and the Invited Lecture by Mary Ritchie Key, with the intriguing title "The Cockroach Syndrome: Phonological and Semantic Stability Throughout the Millennia". This was the second year of what is hoped will remain an annual LACUS event, the awarding of the Presidents' Prize to the paper judged to be the most significant contribution to linguistic knowledge presented by an author who does not yet have faculty tenure; the judging panel consists of the current LACUS President and all former Presidents in attendance at the meeting. This year's prize was awarded to Senko Maynard for her paper "Pragmatics of Interactional Signs: A Case of Uh-huh's and the Like in Japanese Conversation"; this paper is given a prominent position in the volume, immediately following Mary Ritchie Key's contribution. Two runners-up for the Presidents' Prize were also named, Victor Boucher for "For a Phonology without 'Rules': Peripheral Timing-Structures and Allophonic Patterns in French and English" and Angela Della Volpe for "Latin *Uruus* : An Exercise in Historical Semantics and Word-Formation".

LACUS continues its tradition of diversity and eclecticism. This will already be evident to the reader of this introduction from the topic areas (pragmatics/discourse, historical linguistics/semantics, and phonology) of the three papers mentioned above in connection with the Presidents' Prize; this is particularly encouraging, since their authors are among the younger members of our organization and thus represent its future. The diversity of the topics represented at this year's conference does not make it easy to force papers into neat categories for the purpose of organizing this volume. I have attempted to use categories which are fairly "traditional", in order to make it as easy as possible for readers to find the papers which relate to particular topics; of course many papers could have been classified under more than one category. No doubt some authors will disagree with the classification of their

own paper; to them I apologize. The diversity of opinion represented within LACUS will also be evident in other ways in this volume, for example in the different theoretical frameworks utilized. It should go without saying that all opinions expressed in individual papers are the opinions of the author or authors alone and not of LACUS nor of myself as editor.

Of the 53 papers presented at this year's Forum, all but four are included here in this published version of the proceedings. My thanks to all those authors who cooperated by respecting deadlines and by responding promptly to requests for minor revisions. They made the task of editing much easier and more rewarding than it might otherwise have been. Sadly, one of the four papers that I was unable to include in this volume is "Alienable and Inalienable Possession in Malagasy" by Michael Eric Bennett, who died before he was able to submit a manuscript to me. Instead, I have decided to publish his abstract (as found in the conference program) in the proceedings volume. This step may be unusual, but is appropriate considering his large contribution to and enthusiasm for LACUS, especially including his membership at the time of his death on the Long-Range Planning Committee. The abstract is preceded by a brief *in memoriam* written by David Lockwood, his teacher/colleague for 15 years.

My sincere thanks go to Valerie Becker Makkai and Ruth Brend, who both spent a considerable number of hours during the conference at the registration desk. Valerie also took care of the details of the technical production of this volume. Financial support was provided by the Dean of the Faculty of Arts, the Dean of the Faculty of Graduate Studies, and an Ad Hoc Conference Grant, all from York University. Finally, I would like to thank Wolfgang Ahrens for all his work as Co-Chair (and indeed only other member!) of the Local Arrangements Committee.

Toronto, December 1987

Sheila Embleton

I

SPECIAL LECTURES

1987 PRESIDENTIAL ADDRESS

A PERSONAL JOURNEY THROUGH LINGUISTICS

Allen Walker Read
Columbia University

When I was first faced with the need to select a subject for my talk this evening, the topic that I longed to deal with was this: "What Makes Linguistics Tick?" The more I thought about it, the more I realized that it is far too complicated for me to tackle. Every member of this audience has come to linguistics from his own personal background, highly varied from everyone else's.

It is enough of a problem to try to figure out how I myself came to linguistics. What makes me tick? I will outline the circumstances in which I found myself, my motivations, and the problems I have encountered. I run the risk of dealing in trivial details, but sometimes the trivial is a determining force in causing a course of action.

My formal study in the field of linguistics began in 1927, when I took a summer school course, at the University of Chicago, called "Comparative Philology," taught by the renowned scholar Carl Darling Buck. He was already known to me from his announced project on what he first called "A Dictionary of Ideas," a work that came out twenty-two years later, in 1949, under the title, A Dictionary of Selected Indo-European Synonyms.

As the textbook for the course, he assigned William Dwight Whitney's The Life and Growth of Language: an Outline of Linguistic Science. He was apologetic about using a book so old, as it had first appeared in 1875, but he said that he still regarded it as the best general survey. I find it noteworthy that now, speaking in 1987, I began my linguistics with a book published 112 years ago. I think that Buck was probably right, for the pickings were very slim in 1927. He could have chosen Bloomfield's Introduction of 1914, but it was soon to be superseded by Bloomfield himself in 1933. Edward Sapir's Language of 1921 had brilliant new insights, but it was not a full survey. Franz Boas had no one book suitable as a text, and the Linguistic Society of America had just got under way in 1925.

While preparing my remarks for this evening, I have re-read William Dwight Whitney's work in the copy I have preserved over the years, and I am much impressed by how sound and intelligent it is. We can be proud of a long American tradition of linguistic study. I have also delved into the volumes of the

American Philological Association for those years, while preparing a biography of James Hammond Trumbull, the student of Indian place names, and I find that many other scholars were on a cutting edge of linguistic development.

Even before my study with Carl Darling Buck, I had been attracted to the subject of language, fairly far from the center of linguistics. One of the idols of my teen years was H. L. Mencken, and while I was an undergraduate at a small college in Iowa, my bedside reading in 1925 was his volume, The American Language. It led me to take my major in English language, when I went to the University of Iowa for an M.A. There my inspiring teachers were Thomas A. Knott, whose interest in lexicography rubbed off on me, and Frank Luther Mott, who had made studies of regional dialect. I began my life-long interest in place names and carried out my first published research study, a history of the word blizzard, which had come to be applied to a snow storm in Iowa in the 1860s. I even interviewed some old settlers who remembered the development of the word before 1870.

Then I took my first position, to teach "freshman English" at the University of Missouri in 1926 at the age of twenty. The director of the program emphasized grammar strongly, and I had a lot to learn, because my own schooling in boyhood had been in a period when grammar had been cut from the curriculum. This director insisted that we begin teaching our course by diagraming the sentence "Birds fly." However trivial that sounds, it led on to a closer study of how communication takes place. An inspiring scholar there, Robert L. Ramsay, enlarged my horizons.

I joined the Linguistic Society of America in 1926, and now only two members have a longer span of membership than mine (Franklin B. Krauss and Hans Kurath). I attended my first LSA annual meeting in 1927, traveling from Columbia, Missouri, where I was teaching, to Cincinnati, Ohio. There I remember especially meeting Hans Kurath, with whom I had been in correspondence. He was shocked at how young I seemed to be, and said so several times. I have never discussed this with him, but I feel pretty sure that he had confused me with William A. Read, who had been at Louisiana State University for many decades and had written many studies of American English.

My next encounter with linguistic study was at Oxford University, which I was able to attend from 1928 to 1931 because of an appointment to a Rhodes scholarship. I specialized in lexicography under the supervision of Dr. C. T. Onions, but, really, very little linguistics was involved. The lectures I attended were of a philological and literary nature, such as those of Henry Cecil Wyld on English dialects, and of J. R. R. Tolkien on Beowulf. There was no inkling at that time of

his later accomplishments in the literary world. Courses in bibliography and paleography were useful to me later. The head of my small college, St. Edmund Hall, suggested that I take special tutoring in linguistics from a don at Magdalen College and arranged for me to go there for tutorials for several terms. This was with a certain Professor J. A. Smith, with a high reputation, but he dealt with such esoteric philosophical points that I got very little out of those sessions. The fault was mine, as I was not ready for him.

I returned from Oxford to teach again at the University of Missouri in 1931, mostly still in freshman English. There are many ways in which people have their interest triggered in linguistics, but mine came from working with English sentences. I kept wanting to know how language works. Years later my questions were answered principally in the writings of Charles C. Fries. Probably we all have some favorite sources through which enlightenment came. One of my own was his study entitled "Implications of Modern Linguistic Science," in College English of March, 1947. His emphasis was on signals. I wish to read you a passage that struck me as so revealing, from this essay of 1947:

It is impossible to prescribe or to describe the requirements of independent utterances in English in terms of meaning content. The completeness of an utterance is a matter of form not of thought. In the expression "the barking dog," an actor is named (the dog), and an action is ascribed to him (barking). In English, however, this expression is not a sentence. On the other hand, the expression, "The dog is barking," is a sentence - not because it contains any more "thought" than the expression "the barking dog" but because it has the formal characteristics which our language requires in one type of independent utterance. So also, "Who the man is" and "Why he will come" are not independent sentences in English but "Who is the man?" and "Why will he come?" -- which use exactly the same words in slightly different order -- are sentences, because they do have the formal characteristics required for this type of independent utterance.

From the point of view of modern linguistic science each language has its own set of formal characteristics of independent utterances. The patterns of these formal characteristics can be accurately described and can provide for our students a definite set of criteria, instead of the vague admonitions with which our teachers have labored so long. [College English, VIII (March, 1947), 314-320 (quot., p. 319).]

That seems, I'm sure, like a commonplace statement to most of you in this audience, but it was eye-opening to me back in 1947, perhaps showing how naive I was at that time. It was a great relief from teachings of English departments all over the country that "A sentence is a complete thought." Even in such an important book as that by Alan H. Gardiner, published by the Oxford University Press in 1932, the author comes to the following conclusion, after a discussion of 28 pages: "A sentence is an utterance which makes just as long a communication as the speaker has intended to make before giving himself a rest" [p. 208]. Such fatuity represented linguistic learning in some quarters in those days.

But an even more fundamental revision of linguistic outlook came my way in the 1930s while I was working on the University of Chicago campus. In 1932 I went there as an editorial worker on the Dictionary of American English, under the direction of Sir William Craigie, who had transferred there from Oxford University. His austere scholarship has remained an ideal throughout my life.

My lexicographical work was fascinating in dealing with American cultural history, but it involved very little linguistic theory. Such theory was provided from other active centers on the campus. Intellectual interests were very much polarized by the new young president, Robert Maynard Hutchins, and by his henchman Mortimer Adler. They espoused the "Great Books" movement, which seemed to many of us to be backward-looking and in opposition to experimental science.

The "Unified Science" movement had gained a strong foothold there, much strengthened by the refugees from the Vienna Circle, who had fled from Hitler's advance -- especially Otto Neurath and Rudolph Carnap. The University of Chicago Press accepted the project of the Encyclopedia of Unified Science, with contributors working on the frontier of a new scientific outlook, which they called "physicalism."

I believe that this represented a genuine scientific revolution -- what is now called, in Thomas Kuhn's term, a new paradigm. Its effect was to deny the dualism that had plagued Western thought for millenia. In place of a physical realm plus a mental realm, a single, unified realm was postulated, and the so-called mental realm was explained as the working of the abstracting process, developing out of and on the physicalist base.

Already at work on the Chicago campus were the followers of George Herbert Mead, who had made the symbolizing process the center of his work. Also we kept hearing about the works of Charles S. Peirce, which were being edited on the campus, although published at Harvard. A chief exponent of the new paradigm was Charles Morris, who was developing the field of semiotics. His monograph of 1938, Foundations of the Theory of

Signs, established a firm base, and this was built upon in 1946 by his replete, masterly volume, Language, Signs and Behavior. This movement is sometimes called "behaviorism," but that much-abused word does not do justice to the fullness and richness of the unified science outlook.

This background was thoroughly congenial for a newly developing linguistics. In the Anthropology Department, following the lead of Columbia's Franz Boas, Manuel Andrade was developing the new paradigm; but most importantly, Leonard Bloomfield had come in 1927 from Ohio State University. I was taking some courses in the 1930s, such as "Early Germanic Dialects," Beowulf, Middle English, but I was so much in awe of Bloomfield that I refrained from taking his courses. I now regret this.

Seminar meetings, open to the University community, were held on Friday afternoons, at which advanced thinkers presented their new formulations, and the atmosphere of intellectual ferment was strong. At Hutchinson Commons, where we got a good dinner for forty cents, there would be heated discussions at the tables of graduate students.

I regard Bloomfield as so important, not because he said the last word in linguistic method, for he didn't. There was plenty left to do for Kenneth Pike, for Henry Lee Smith, for Bernard Bloch, for Charles Hockett, for Eugene Nida, for Robert A. Hall, for Allan Gleason, for Dwight Bolinger, for Uriel Weinreich, and for the many, many others who have produced fresh and stimulating formulations. (The individuals I have mentioned are those that have especially influenced me.) But Bloomfield brought into linguistics the physicalist paradigm that makes scientific rigor possible. Many linguists still work under the tired old dualism, and a genuine rigor cannot be expected from them.

Alongside the University of Chicago campus was another "force," if I may so label him, in the person of Alfred Korzybski. He developed a theory of evaluation (which would popularly be called "a philosophy") that he presented in 1933 in a thick book entitled Science and Sanity. This came to my attention in the fall of 1936, on the recommendation of a fellow student, and I realized that Korzybski too was attempting to shatter the old dualisms. His terminology for this was "non-elementalism" -- that is, we should not split the world into separate domains, or elements, but should accept the organism-as-a-whole-in-its-environment. He originated the term neuro-linguistic, which has proved useful to many later workers.

Korzybski set up his Institute of General Semantics in 1938, two blocks east of Stag Field, but he was not much accepted by the University community. There were several reasons for this. He was regarded as "over-eager" -- pushing his own worth too

zealously. Then he used the word non-Aristotelian to describe his work, and the defenders of Aristotle's greatness took offense. Any amount of explaining that Korzybski respected and even venerated Aristotle did not suffice. Furthermore, Korzybski did not come up from a specialized discipline, as one is supposed to do, but burst forth as a full-blown generalist. And he was scornful of the traditional philosophers. I have even heard him use the callow word-play "foolosophers," and no wonder the foolosophers boycotted him.

He had developed his "general semantics" without help from linguistics, for even the Sapir of 1921 was not known to him; but it was clear to me that the new linguistics then being promoted in the Linguistic Society of America was in full harmony with his outlook, and indeed was needed to round out his theories. Korzybski's strong emphasis on the process of abstracting should be incorporated into standard linguistic theory, as it accounts for matters that are otherwise assigned to the "metaphysical" or described by that abominable phrase "psychological reality."

I continued attending the LSA meetings whenever I could, that is, when it did not meet with the American Philological Association. My first allegiance was to the American Dialect Society and to the Present-Day English section of the MLA, and I could attend the LSA only when it met in the same town with them. I remember especially the meeting of 1932 in New Haven, a long train ride from Chicago. My own paper on the "Pronunciation of the Word Missouri" had been accepted. I was able, by then, to identify the leaders. A young and eager Adelaide Hahn was outstanding. There was Morris Swadesh, who commented on every paper. He had evidently set himself the task of not letting a paper go by without some sentences of criticism. Roland G. Kent at that time was a vigorous, upstanding man, and in later years I was saddened to find him stooped and slow-moving. Edgar H. Sturtevant contributed liberally, and I remember a statement of his in 1932 that electrified the audience: "This is the worst paper ever given before the Linguistic Society." It was said concerning a paper (not mine) by a scholar who worked for many years in the New York area.

During these years Kenneth Pike made a strong impression. His skill in producing strange phonetic phenomena became legendary, and his distinction between the "-emic" and the "-etic" was seen to be a major contribution.

I left the stimulating atmosphere of the University of Chicago in the spring of 1938, upon receiving a Guggenheim fellowship, to work on a lexicographical project of my own. I began work at the British Museum in London, although the threat of war made the atmosphere tense. I had opportunity to attend meetings of the Philological Society, which I had joined in 1931, sponsored

by Dr. C. T. Onions. It was a pleasure to become acquainted with Professor J. R. Firth, whose outlook, especially in semantic matters, influenced me strongly. I was scheduled to give a paper before the Philological Society at the meeting of October, 1939, with the title "Briticisms." I have learned from friends that this topic outraged certain members, who vowed that an upstart American should never be permitted to speak on such a ridiculous subject. Any such confrontation was avoided, however, because all meetings were cancelled by the outbreak of war, and I was obliged to return to the United States in September, 1939.

When the war reached America in 1942, I was drafted into the Army and was so fortunate as to be assigned to a dictionary-making outfit, with offices in a building overlooking the Battery on the lower tip of Manhattan. We compiled materials for a dictionary of military terms, under the direction of two competent civilians, Leonard Bacon and Grover J. Cronin, with a Colonel in administrative charge. This Colonel was something of a publicity hound, and got our project reported on the front page of the Sunday New York Times. This incensed his superiors in Washington so much that they had our dictionary declared a "military secret." Thus it became a crime to mention what had appeared in the preceding week on the front page of the New York Times. This bolsters anyone's skepticism of "military secrets" by fiat. Our dictionary was later finished at another unit under the masterly direction of a civilian, Clarence Barnhart.

Then in 1943 I was especially lucky to be assigned to the Language Section of the War Department at 165 Broadway, where various linguistic projects were being tried out under the direction of Major Henry Lee Smith. I lived on a "quarters and rations" allowance in Greenwich Village, and felt that it was almost indecent to be in such an interesting and stimulating situation when a war was going on. Henry Lee Smith and George Trager were getting together their system that resulted in the book of 1951, An Outline of English Structure.

We had an informal club that met after office hours and we heard papers that were developing the Trager-Smith approach. Other presentations were given by William Austin, Norman McQuown, Morris Swadesh, and John Kepke. We made language guides for a great variety of languages, over 40, if I remember rightly, and there were running battles with some translators who were contemptuous of a systematic linguistics. New linguistic notions were always buzzing about. The outlook of Benjamin Lee Whorf affected me deeply.

We had many shorter term workers, who stayed for varying periods, such as Stanley Newman, Charles Hockett, Fred Householder, Paul Garvin, Herbert Penzl, William Gedney, Raven McDavid, and many others. We felt that we were carrying on an

American-based linguistics and were not cordial to the intrusion of certain refugee scholars. This was resented by some of them, who felt that they were superior to American scholarship. Especially difficult to deal with was Roman Jakobson, who seemed to us at that time to be overbearing and self-aggrandizing. Bloomfield, with his characteristic humility, in an interview listened to him patiently, but Jakobson later boasted, "I set him right on many matters." We did recognize Jakobson's high worth, and some of the linguists with pull managed with great effort to get him a position at Columbia. Soon afterwards he was offered a better position at Harvard and left New York without thanks for the efforts that had been made in his behalf.

It has surprised me to find that in a paper by Thomas Sebeok, published in 1977, our office at 165 Broadway is described as being a "cabal" and a "powerful clique" consisting of "misguided chauvinists." Sebeok's criticism is as follows:

Jakobson's teachings ... were roundly condemned by an influential cabal of autochthonous and lately-naturalized linguists -- mostly a generation or two older than mine --- clustering around "165 Broadway." ... In truth, these men were mostly misguided chauvinists, afflicted with a hubris doubtless induced by pressures and fears of an uncertain military conflict in the backdrop. Regrettably, the behavior of this small but powerful clique -- which caused Jakobson and his friends untold anguish, to say nothing of economic loss -- left a sinister stain on the otherwise magnificent tapestry of achievements of American linguistics of the 1940's. Fortunately, this dark episode was transpierced by brilliant shafts of light emanating from giants like Boas and Bloomfield; their instant appreciation for Jakobson's decisive presence must be allowed to compensate for all the rest, which had better stay buried with other, similarly motivated, wartime debris. ["Roman Jakobson's Teaching in America," in Roman Jakobson: Echoes of His Scholarship (Lisse: Peter de Ridder Press, 1977), p. 416.]

Sebeok paints a picture very different from the one I remember. There was no "chauvinism" whatsoever, but at most a touch of justified "nativism" -- a pride that helps to keep a culture's traditions in a healthy state. At best it was a difficult problem to take care of such an influx of learned refugees, and some feelings were bound to get hurt. Our member Robert A. Hall, Jr., has explained the attitudes of the time in a study published in 1969. He wrote:

However, the strong anti-European feeling of many American linguists in the 1930's and 1940's had its main roots in often-times bitter personal experiences. Not a few young Americans saw, and frequently more than once, positions (for which they had been trained and were eminently qualified) snatched from under their noses and given to European refugees. Such a reaction, though by no means generous, was easily understandable in the days of the depression when any job at all was hard to come by, especially since American scholars, then as now, were not protected by citizenship-requirements of the kind prevailing in virtually all European university-systems. A frequent remark heard from [these American scholars] ... was "We'll show those Europeans we have something they never dreamed of!" ["Some Recent Developments in American Linguistics," in Neuphilologische Mitteilungen, LXX (1969), p. 194, footnote 3.]

I remember the atmosphere of 165 Broadway as crackling with innovation and fresh approaches. The social implications of a scientific linguistics were strongly emphasized. A favorite phrase of Morris Swadesh, who was unabashedly Marxist, was "programmatically linguistics." The sudden ending of the war left us with much unfinished work, and I understand that our materials were stored for years in a freight car on a siding outside Washington, and I have never heard how they were disposed of.

From 1945 on I was able to continue my work at Columbia University, in lexicography, the history of American English, usage studies, research in American place names, etc.

I found it very saddening that when Noam Chomsky came along in the 1950s he took positions that went back to untenable scientific foundations. I had, in a difficult intellectual struggle, attained my own belief in a unified, monistic foundation for human behavior, and I was deeply disappointed to find Chomsky returning to the old dualism. As he put it: "It becomes necessary ... to postulate a second substance whose essence is thought, alongside of body, with its essential properties of extension and motion." ["Language and the Mind," in Columbia University Forum, XI (Spring, 1968), p. 8.]

For me, this was undercutting sound linguistic and especially lexicographical theory. In a Platonistic way, he postulated the existence of semantic entities independent of forms, in a mentalistic realm. As he said: "The very notion of 'lexical entry' presupposes some sort of fixed, universal vocabulary in terms of which these objects are characterized." [Aspects (1965), p. 184.]

But can any working lexicographer accept the existence of a "fixed, universal vocabulary"? I say NO. A sound linguist surely must be impressed by the great variety of ways in which different cultures segment the world. As Uriel Weinreich has well said: "the semantic 'map' of each language is different from those of all other languages." ["On the Semantic Structure of Language," in Universals of Language, ed. Joseph Greenberg (1963), p. 114.]

I believe that a continued insistence upon physicalism is important for linguistics. In some circles it is customary to say that this is an example of "reductionism," as if some phenomena were being left out or ignored. But using the word reductionism is merely the strategy of labeling something with a derogatory and nasty term. In the one unified realm of being, the phenomena are re-allocated to another place in the system, by the abstracting process that language makes possible, and nothing is ignored. The term "reductionism" is unfair.

I wish to turn now to another phase of my linguistic work. This has never been in the mainstream of our concern, but I wish to call it to your attention. I refer to the MOTIVATION of the use of language. In recent decades the word "communication" has usually been used to cover the subject. Even in 1875, William Dwight Whitney, in the book that I mentioned at the beginning of my talk, stated: "Language ... is expression for the sake of communication." [p. 1.]

But there are other motivations that we must not lose sight of -- especially, as I shall now maintain, the PLAY SPIRIT. I have produced a cycle of studies in this area, dealing with adult baby-talk, pig Latin, mock Latin, double talk, intentional mispronunciation, the sportive naming of non-existent objects (beguilers), and the like.

Such subjects have been mostly pursued by folklorists and anthropologists, as our disciplines share many areas in common. For instance, in 1971 at the annual meeting of the American Anthropological Association in New York City was held a "Symposium on Linguistic Play," resulting in the very provocative volume Speech Play, ed. Barbara Kirshenblatt-Gimblett (Philadelphia, 1976). Later meetings resulted in the formation of The Association for the Anthropological Study of Play, which held its first annual meeting in Detroit in April, 1975.

But the subject had a longer period of formation. The great Dutch historian, Johan Huizinga, is best known in this connection. In 1933 he chose as the subject of his address as Rector of Leyden University, "The Play Element of Culture," and he developed this into his classic study, Homo Ludens, finished in Dutch in 1938. It underwent revisions for a German version in 1944 and an English one in 1950. His purpose, he said, was to lay "stress on the concept of play and on the supreme

importance to civilization of the play-factor." [Homo Ludens: a Study of the Play-Element in Culture (Boston: Beacon Press, 1955), "Foreword," p. x.]

Some important theoretical questions have arisen in the study of play. The terminology requires careful discrimination. Much depends on how one allocates the semantic area of somewhat related terms like sport, games, contest, myth, ritual. Huizinga has stated: "No other modern language known to me has the exact equivalent of the English 'fun.'" But is "fun," even in English, a necessary component of play? Huizinga believes that "the fun of playing, resists all analysis, all logical interpretation." [p. 3.]

A remarkable characteristic of play is the high degree to which it is structured. In this matter linguistic considerations have a strong bearing. Can play be serious? If activities are serious, can they still be classified as play? In this regard, the nature of ritual is deeply involved. It has been claimed that all poetry is motivated by play -- in fact, that the whole realm of esthetic matters can be called play. According to this outlook, much of language falls into the area of play, especially because all metaphors are evidence of play, and metaphor permeates deeply into all language.

A number of my studies already in print strongly indicate the play motivation. In 1941 in my paper on spelling bees, I showed how the intractable problem of English spelling, with its social pressure toward uniformitarianism, was turned into a game. The spelling contests began in the schools of Elizabethan England, but in New England around 1800 they were turned into an evening entertainment of a neighborhood, and the practice moved westward with the frontier. ["The Spelling Bee: a Linguistic Institution of the American Folk," PMLA (June, 1941), 495-512.]

If you accept the wide definitions of Huizinga, another study of mine, published in American Speech in May, 1961, concerns the play spirit. This is my analysis and history of the "Rebel yell." Huizinga's chapter on "Play and War" aroused more dissent than any other of his positions, but he supported his argument by reference to medieval tournaments and the "single combat" that sometimes substituted for martial engagements. He recognized that the Nazi version of war altered the relationships drastically. As he said: "It remained for the theory of 'total war' to banish war's cultural function and extinguish the last vestige of the play-element." [p. 90.] Believing as he did that "civilization is rooted in noble play" [p. 210], he was much shaken by the Nazi reversion to barbarism. But the American Civil War was a different story, in which gallantry often prevailed. The yelling of the Confederate soldier, described as "a shriek, sky-rending, blood-curdling, savage beyond description," was part of the

"play" that he brought into his fighting. ["The Rebel Yell as a Linguistic Problem," American Speech, XXXVI (May, 1961), 83-92.]

Many commentators have remarked on the relationship of the play spirit to creativity. This is richly apparent in the coinage of words, and the lexicographer is constantly surprised at the ingenuity displayed at all levels of social status.

The westward movement of the American frontier resulted in a throng of lawless coinages: discombobulate, hornswoggle, absquatulate, squablification, explunctify, slantindicular, angeliferous, lallapalooza -- these are samples. I concluded in my study, "The Criteria for a Class of Jocular Words in English," in Maledicta, VI (1982), p. 178: "The play spirit is so diverse and uninhibited that any attempt to find 'underlying principles' would be forcing it into a Procrustean bed."

I have discovered that the play spirit was the chief motivation for the coinage of the most notorious Americanism that has been added to the vocabulary of English. I refer to O.K. To displace the dozens of etymologies that have been put forward, I built up an edifice of documentation that I think represents the historical fact. In Boston, Massachusetts, in the late 1830s, a remarkable craze developed for the use of abbreviations. The letters n.g. were popular for no go, O.F.M. for Our First Men, a.r. for all right. Sometimes the words were misspelled, as all right spelled oll wright, with the abbreviation O.W. On this model, all correct was respelled oll korrekt, with the resultant abbreviation O.K. It is this one that lasted on with such success. The earliest known written use is in the Boston Morning Post of March 23, 1839, in the repartee of its editor, the witty Charles Gordon Greene. ["The First Stage in the History of 'O.K.'," in American Speech, XXXVIII (Feb., 1963), 5-27. Cf. also "The Folklore of 'O.K.'," ibid., XXXIX (Feb., 1964), 5-25.]

I have recently been working at the derivatives from geographic names, to find out what patterns direct the Bostonian from Boston, the Cantabrigian from Cambridge, or the Provincetowner and Provincetonian from Provincetown. The play spirit introduces many complexities. An early student of the American vocabulary, John Russell Bartlett, announced in 1859: "[The names] Connecticut, Massachusetts, and Arkansas refuse to yield to the process at all." [Dict. of Americanisms, 2nd ed. (1859), p. xxiv.]

But the actual record shows that many forms can be found. For the name Connecticut I have found seven derivatives:

- (1) Connecticotian, used in 1702 by Cotton Mather in his Magnalia Christi Americana.
- (2) Connecticutensian, used in 1781 by Samuel Peters in his history of Connecticut.

- (3) Connecticutter, used in 1897 in a California periodical.
- (4) Connectican, used in 1942 in a letter to the Baltimore Evening Sun.
- (5) Connecticutan, used in 1946 by the book reviewer John Cournos.
- (6) Connecticutian, reported in 1947 from New Britain, Connecticut.
- (7) Connecticutite, used in 1968 by an anonymous reviewer in Playboy.

But in addition are several jocular forms, the cleverest being Connecticutie, referring to a pretty girl of Connecticut, first used in 1938 by the essayist Frank Sullivan about Mrs. Heywood Broun and in 1947 by a journalist about the Hon. Clare Boothe Luce. Also jocular is Connecticanuck for a Connecticut person of French background, as well as Connectikook, an oddball or eccentric from Connecticut, and Connecticutup, a prankster from Connecticut. It is dangerous to say, as Bartlett did, that forms cannot be found. I have given the documentation in "What Connecticut People Can Call Themselves," in Connecticut Onomastic Review, No. 2 (1981), 3-23.

In its most generalized form, the play spirit is the exuberance characteristic of all healthy human beings. This exuberance may well have been the prime mover of language itself. It is possible for us as linguists to pursue our studies in this same exuberant spirit, as I have found in my "personal journey" over many decades.

INAUGURAL ADDRESS

WHY DON'T MORE LINGUISTS RECOGNIZE
THAT PEOPLE KNOW WHAT THEY'RE TALKING ABOUT?

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I

If this discourse were a sermon rather than an Inaugural Lecture to an Annual Meeting of the Linguistics Association of Canada and the United States, I could begin with a text or lection from Holy Scripture. For what I am about to say an appropriate reading from our linguistic scriptural heritage would be from the twenty-third chapter of Louis Hjelmslev's (1961: 127) Prolegomena to a Theory of Language in Whitfield's 'authorized' version:

In its point of departure linguistic theory was established as immanent, with constancy, system, and internal function as its sole aims, to the apparent cost of fluctuation and nuance, life and concrete physical phenomenological reality. A temporary restriction of the field of vision was the price that had to be paid to elicit from language itself its secret. But precisely through that immanent point of view and by virtue of it, language itself returns the price that it demanded. In a higher sense than in linguistics till now, language has again become a key position in knowledge. Instead of hindering transcendence, immanence has given it a new and better basis; immanence and transcendence are joined together in a higher unity on the basis of immanence. Linguistic theory is led by inner necessity to recognize not merely the linguistic system, in its schema and its usage, in its totality and in its individuality, but also man and human society behind language, and all man's sphere of knowledge through language.

When, some six months ago, Adam Makkai telephoned to invite me to give this lecture, he asked me to be as witty, as provocative, and as 'British' as I could be; and, feebly, on the spur of the moment, I came up with the tentative title 'Why don't more linguists talk about knowledge?', which I later changed to 'why don't more linguists recognize that people know what they are talking about?': nothing

particularly witty or 'British' about either of those, but then I have been in Canada for twenty-one years and am also a Canadian citizen. I do hope to be provocative, though, because I am deeply serious about what I consider to be a need to re-adjust radically the object and the goals of linguistic inquiry.

First of all, the object of linguistic inquiry: I know that many of us here have never explicitly accepted, or have at some time rejected, the premise that our concern should be with all and only the well formed sentences of a language. Hjelmslev himself took text as the object: 'The objects of interest to linguistic theory are texts' (Hjelmslev op. cit.: 16). J. R. Firth (1951/1957: 190) held that 'the constructs or schemata of linguistics enable us to handle isolates that may be called language events' and that the first abstraction was to be made 'by suitably isolating a piece of 'text' or part of the social process of speaking for a listener or writing for a reader' (ibid: 192). Michael Halliday (1977) has, for some time now, focussed on 'text as semantic choice in social contexts'; and Sydney Lamb (1966: 541-543) recognized that text not sentence was the object when, at one point along the 'crooked path of progress', he wanted 'a grammar that generates as many texts as possible...while generating as few possible spurious texts'. Pike and Longacre have extended their grammatical hierarchy beyond the sentence up to discourse, and Longacre (1976) has trenchantly argued that the grammar of the sentence itself is not explicable without recourse to larger textual units. On the other hand, we have all been influenced, directly or indirectly, by sentence dominated scholarly traditional grammar, and the Bloomfieldian and Chomskyan traditions have been wedded to the sentence as object. In other words, what Halliday (c.f. 1984) has called the 'ethnographic' tradition in linguistics has for a long time stated that its object is discourse or text, and the 'philosophical' tradition has explicitly adopted sentence. However, I think it fair to say that most of us have probably spent more time, energy, and print on the sentence and its constituents than on discourse or text. The terms 'discourse' and 'text' have been used with a reasonable degree of overlap, but as 'text' has been used not only for a semantic unit but also for a physically manifested object, I prefer the term discourse; our object has essentially to be a unit of meaning.

To make my own position as clear as possible I'm going to quote from a paper I gave to the XIIIth International Systemics Workshop at the University of

Kent at Canterbury last July (Gregory 1986/forthcoming):

...I maintain that discourse, not sentence or clause, is the subject and object of linguistic science. It is what we have to study in order to explain language behaviour, and the goal of understanding language behaviour is to explain discourse.

A partial analogy: Marx held that the working class has to be the subject and object of its own revolution; socialism cannot be imposed from above; genuine revolution is a matter of self-emancipation. Discourse has, one might say, to be self-emancipated in linguistics (i.e. become its subject and object) and not be studied as an afterthought while linguists escape from their responsibility by describing a reductionist, formalized, idealization; the latter is a theoretical pursuit, but it is also an essentially trivial one, unless it involves continual renewal of connection with discourse. Linguists have to be in the vanguard of the discourse revolution, not cheering from the sidelines. The task is not, as the promotion of the Frances Pinter Open Linguistics Series puts it, 'to open out "core" linguistics...to encompass discourse and the description of natural texts', but to recognize that discourse, the linguistic exchange of messages in situations, is itself the 'core' of linguistics'.

I might have added that an understanding of discourse cannot be imposed from 'below', from a sentence grammar; and, as I indicated at the Second Rice Symposium on Linguistics and Semiotics, discourses, as message realizing stretches of linguistic activity which function as more or less communicative wholes, demand a gnostological dimension in their description (Gregory 1984/forthcoming). We have to be prepared to cope with the knowledge that is relevant to the understanding of how, and what, messages are originated, transmitted, and more or less received and interpreted in the societies and cultures in which we are involved. Discourse, as a matter of message, can be distinguished as discourse as the communicative impetus, the addresser's message; discourse as the communicative consequence, the addressee's message, and discourse as the communicative fact, the text that is the realization of the viable message, those

meanings which are retrievable by third parties who share both the relevant linguistic code and generalized situational knowledge. In the most perfect of perfect worlds there would, as a matter of message, be an exact fit amongst all three. But we are, after all, only human so there usually isn't. If we are to take an holistic rather than a reductionist stance, a discourse has to be approached not only as a set of linguistic relations, but also as a set of socio-cognitive relations.

In the last thirty years there has, of course, been much talk about cognitive linguistics. But what is perhaps new in what I am saying is the 'knowing' to be investigated. I am not just talking about knowing how to make well formed sentences, or indeed how to make cohesive texts. I am talking about knowing what to discourse, and, of course, about the relationships between the hows and the whats. My question is not 'Why don't more linguists recognize that people know how to talk?' but 'Why don't more linguists recognize that people know what they are talking about?'; and this is to be understood not in the sense that people are always right when they talk but that their talk is about what they know.

Some people may want to say that linguistics should only concern itself with the 'how' of language. If they do, I say they are selling linguistics short, and ignoring an important if underdeveloped aspect of our tradition. Philology, our ancestor, involved itself in the 'what' as well as the 'how'; it studied the 'how' in search of the 'what'; and Hjelmslev was quite clear about his position. The circumscription to an immanent point of view as opposed to a transcendent one he saw as 'necessary' in his time, but 'only as a temporary measure' involving 'no reduction of the field of vision, no elimination of essential factors in the global totality which language is' (Hjelmslev op. cit.: 19). It is now nearly forty-five years since the Prolegomena and I suggest time we moved away from the 'temporary' measure and reached towards the fuller vision of the Hjelmslevian passage I began with today. De Saussure was quite clear too. For him the sign was an indissoluble relationship of signifier and signified, and linguistics le patron general of semiologie, the science which would study the life of signs within society. The signified in communication; the 'what' of communication, and the signifier; the 'how', are equally to be our concern because they are mutually sustaining. Nor do we have to be able to put our fingers on ultimate signifieds in order to pursue this relationship.

Furthermore, the 'how' of language is only fully understandable in terms of the 'what' and the 'what' in terms of the 'how'. To put it simply, but I think not naively, people know what they are saying and how to say it. I am not, of course, suggesting that either aspect of this knowledge is necessarily conscious. As Jonathan Culler (1976: 81-82) has succinctly put it,

The speaker of a language is not consciously aware of its phonological and grammatical systems, in whose terms his judgements and perceptions can be explained. Nor is the subject necessarily aware of its own psychic economy or the elaborate systems of social norms which govern behaviour.

It is the human, social scientist who makes explicit, the implicit in these matters. And as linguists we will indeed sell ourselves short if we only make explicit the systems of grammar and phonology, in the sense of the 'wordings' and 'soundings', and reject the 'meanings', the semology, and the 'knowings', the gnostology which makes meaning possible. We are concerned with a realizatory cycle and the stages of the cycle are understandable best in terms of each other.

If we think of the grammar of a language in the fuller sense of its semologic, syntactic, and phonologic cycle of systems, it stands as the 'how' to the 'what' of the knowledge, the shared gnostologies of speakers of the language. And the grammar is what it is because it answers to these demands of knowing and itself shapes this knowledge.

When we talk we talk about real or imagined events, relations, participants in events and items in relation and so a grammar has what have variously been called predication structures, case frames, transitivity systems; it has an experiential sub-component. We can relate predications; we can co-ordinate them and we can see them in terms of mutual relationships such as cause and effect, point of reference and contrast, conditioning and conditioned, identifier and identified, classifier and classified, item and attribute, and so a grammar has systems of para- and hypo-taxis; it has a logical sub-component. The experiential and the logical give the grammar an ideational component which reflects language as about life.

When we talk we talk to someone. Our linguistic activity is one of purpose, intent and attitude manifested as inter-action. So we have such systems as speech function and mood together with attitudina-

lizing and modalizing systems; all of which are part of the grammar's interpersonal component, language as a form of doing, a living act.

When we talk we have starting points and highlights to our messages, focusses and prominences and connections and so grammars have systems such as theme and rheme, given and new, and cohesion systems which link messages together to form discourse; these comprize the grammar's organizing or textual component, language as itself, a distinct medium of communication. So, I maintain, Michael Halliday's (1979) functional-systemic view of language is both extrinsically and intrinsically justifiable. It can provide the immanent basis for transcendence. It enables us to predict not only that a minimum discourse such as an independent clause will simultaneously have ideational, interpersonal, and textual meaning but also, when we have a gnostological dimension in the theory, what particular ideations, interactional intents and attitudes, what organization a discourse of a particular kind will have in a particular culture.

II

I am not suggesting that the goal of linguistics is to cater descriptively for the whole of human knowledge, that we should all become encyclopaedists. I am proposing that we should construct frameworks that enable us to deal systematically with the study of language users' and receivers' knowledge as it is consistently relevant to the description of the discourse they construct between them; we can be prepared to account, in a principled way, for the knowledge that is 'at risk' in texts that are typical and/or significant in the language or languages we are describing. Gnostological inquiry pertinent to these aims has been initiated in the cognitive stratificational tradition by Copeland and Davis (Copeland 1983, 1985; Copeland and Davis 1980, 1983; Davis and Copeland 1980) and Lamb (1984), and in the socio-semiotic and systemic-functional tradition, particularly as regards the work on social cognition, ideology, genre, and intertextuality by Kress and Hodge (1979), Fawcett (1980), Martin (1985), and Lemke (1985). What I am going to sketch out now is the framework that those of us who are working in the communication linguistics strand of systemic-functionalism are developing (c.f. Gregory 1984/forthcoming, 1986/in press, 1986/forthcoming: Asp 1985,

1986/in press). We take a functional perspective and regard knowledge as social fact, gained, maintained, and changed through social practices. It is fundamentally a dialectical materialist approach recognizing the unity of knowing and doing. As Asp (1986/in press) has indicated:

The materialist aspect of the theory recognizes that knowledge is the consequence of conscious and unconscious generalization and abstraction of meaningful patterns from ongoing life activities. The process is dialectic insofar as it is continually renewed in the conduct of daily life. Abstractions are mutable, open to modification in contact with new instantiation. And perception of phenomena is modified by existing abstractions, by what we already know.

We are using two related constructs to cope systematically with the knowledge relevant to the description of discourse: communicating community context and generic situation. The communicating community context is the macro-environment of our knowing, doing, meaning and saying, and is describable along the intersecting dimensions of temporal, geographical, social and individual provenances. The knowledge at risk in a discourse is circumscribed by the parameters of time, place, social system and authorship. What was known at the turn of the sixteenth to the seventeenth century, the Shakespearian 'moment', for example, is different from what is to be known now. Scientific and technological developments in the last fifty years have radically altered our consciousness of what is possible. But that is related to the place where we are, our geographical provenance. There are many parts of the world which, as regards the knowledge of people and communities, could not be said to be living in the 'space' or the 'computer' age. Peking is not such a place. People there are aware of space and computer possibilities. But when I was living and working there last year, I was aware that what is to be known in Peking differs from what is to be known in Toronto. An understanding of social provenance entails analysis of ideological, economic and political systems, particularly as regards the division of labour, relationships surrounding the means of production, and their legitimations. What was to be known within feudalism, what was and is to be known within tribalism, differs from what is to be known within capitalism or socialism. It is also true that what one individual knows differs from what another knows. As Berger and Luck-

mann (1967) indicate, each of us has what could be called a 'self', an identity certainly acknowledged by ourselves and usually acknowledged by those with whom we interact. However individuality is itself constituted in terms of the communicating community context of which it is a part. This was well expressed by Marx in Grundrisse (1939/73: 84):

The human being is in the most literal sense a zoon politicon an animal which lives in communities, not merely a gregarious animal, but an animal which can only individuate itself in the midst of society. Production by an isolated individual outside society...is as much an absurdity as the development of language without human beings living together and talking to each other.

So it is that the communicating community context as the macro-environment of our knowing and doing is reflected in linguistic behaviour in the choice of one language rather than another and in terms of temporal, geographical and social dialects and their configuration in discourse. Our own unique response to this environment is reflected in our individual dialect or idelect, our version of a particular dialect configuration. The communicating community context as the macro-environment of knowledge is the ultimate source of potential messages, of meaningful behavioural options. The potential messages may or may not be transmitted by a language code (even if they have been learned by way of such a code). This is why, theoretically and descriptively, we need the distinct though related categories: communicating community context - language or, more specifically, dialect configurations, temporal provenance - temporal dialect, geographical provenance - geographical dialect, social provenance - social dialect, individual provenance - idelect. A person's knowledge is, of course, only accessible to us insofar as it is communicable, which is what lies behind the deliberate repetition in the categorical term: communicating community context.

The ongoing life activities from which we consciously and unconsciously generalize and abstract meaningful patterns comprise instantial situations. These activities recur, are regularly renewed in the conduct of our daily lives and so reflect generic situations, the micro-environments of our knowing and doing. Knowledge is both activated in and gained through instances of the generic situations in which we are communicatively involved in terms of a rela-

tionship to a human experience or experiences, in terms of an interactive relationship to our fellow human beings including ourselves, and in terms of a relationship to a medium of communication. This configuration of experience relationship, interaction relationship, and medium relationship provides a complex communicative function in instances of a generic situation and they are the dimensions along which it is describable. Our knowledge includes a knowledge of the meaning and realizatory potential of the medium or media of communication open to us. In the case of language as a kind of doing, the potential associated with a particular generic situation is known as its register (c.f. Halliday 1978: 31-35, Gregory 1986/in press).

Now it is important to recognize that any particular communicating community context is characterizable in terms of the generic situations which are potential within it. In other words, communicating community context and generic situation are in a model to instance relationship in Richard Hudson's (1984: 14-31) use of those terms. Similarly, any configuration of temporal, geographical, social and individual dialects is characterizable in terms of its available registers.

A register, in turn, is characterizable in terms of those ideational, interpersonal and textual choices from the resources of the language favoured by users in a particular generic situation. That is why, in the description of a discourse, the key category which, by way of register and dialect configuration, links the analysis of the linguistic parts of the discourse to the whole and to the knowledge at risk is that of phase (c.f. Gregory and Malcolm 1981, Gregory 1982, 83, 84, 84/forthcoming, 85, 86/in press, Young 1984, 1987, Dill 1985).

Phasal description distinguishes, at varying degrees of delicacy, stretches of discourse (continuously or discontinuously manifested) which share ideational, interpersonal and textual consistency and congruity. Transitions out and/or into phases are signalled by changes in selection in one or more of the functional components. At Houston I described phase as reflecting the dynamic instantiation of micro-registers (Gregory 1984/forthcoming). Another way of putting that is to say that phases reflect the micro-instantial situations of the discourse, the particular experiences, interactions and medium relationships that the language is representing and/or creating. It reflects these as process, as dynamism, as succession and return (partial or complete). I sketched how the model shows this in a short paper to

the Cornell meeting of this association; 'Discourse as the Instantiation of Message Exchange' (Gregory 1985). I argue that phasal analysis provides a way for a consistent catalysis; and, from this point of view it will be clear that so-called 'pragmatics' is nothing more nor less than instantial semantics, instantial gnostology. As the philosopher David L. Miller (ed. 1982: 26) put it, discussing the work of George Herbert Mead 'the locus of universality and generality is in the process'. Figure I summarizes these observations.

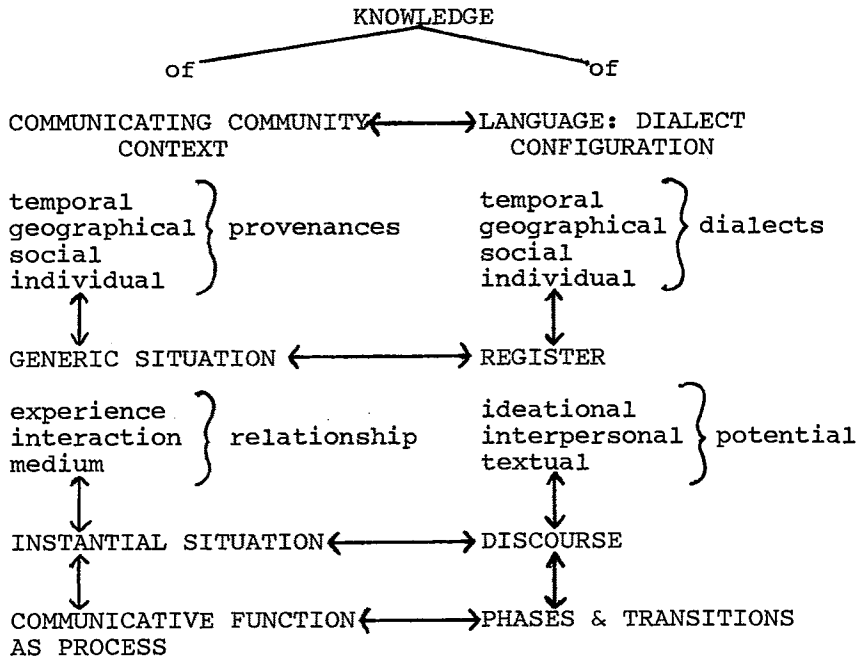


Figure 1

What is important is that it is in a situation as an instance of a generic situation that we have a communicative function, and this function has an inherent complexity. It is only in terms of a relationship to an experience or experiences, in terms of a real or imagined audience, and in terms of a particular medium that we have, if you like, 'anything to say'. Corresponding to the function the instantial and generic situation provides us with is our knowledge (implicit or explicit, more or less conscious)

of register, the meaning potential of the language we are using or receiving appropriate to the situation.

The experience relationship predicts the range of options in the ideational component of the language code: what process types (action, mental, or relational) are at risk, the nature of the participants (animate or inanimate, known or unknown etc.), the circumstances of time, place, and manner of the events; and the perspectives we have on these experiences as to whether they are durative, habitual, completive, inceptive and so on. These semological options correspond to the particular kind of experience we are relating to and are realized in the morphosyntax of English, for example, by the selections made in the transitivity and adjunctivization systems of the clause, the modification, head and qualification systems of the nominal group, and the tense and aspect systems of the verbal group. The particular range of options we have in a given register constitute what I called in my earlier work (Gregory 1967 for example) the potential field of discourse available; the actual selections taken in a particular language event constitute the field of that particular discourse.

The interactive relationship in the situation predicts the selections of options in the interpersonal component of the language code. This involves the choice of speech functions (comments and directives of different kinds) realized in English by the syntactic system of mood with options between indicative and imperative, and within indicative between declarative and interrogative, and by the choice of phonological 'tune'. It also involves the matter of user's turn, whether the speaker is initiating or responding or continuing which is related in the syntax to choices between major or minor, full or elliptical clauses. There are options which indicate social distance between speakers, reflected, for instance, in the use of address terms, ranging from My Lord, or Sir, to Mary, darling, and duckie. Interlocutor assessment, a checking by the user of his receiver's stance, is reflected in syntactic tags such as isn't he? and items such as eh?, huh?, right?, and what? with characteristic phonological features. The systems referred to so far are concerned with the interpersonal function as the negotiation of roles between user and receiver. There is another set of interpersonal systems which allow the user to indicate to the receiver his assessment of, and attitude to, the events and relations he is verbalizing. The range of syntactic modalities in the English verbal group: may, might, can, could, shall,

should, will, would, must, ought etc. allow the user to mediate, as regards the event he is realizing, in terms of different kinds of assessment of likelihood, capacity, and hypothesis. There are sentence rank elements in the syntax realized by items such as probably, possibly, perhaps, and maybe which fulfill a similar semological role as well as comment items such as fortunately, mistakenly, happily, and sentence rank final attitudinals realized by clauses such as which is a pity, which was a good thing, which allow the user to intervene, personally as it were, in his message exchanging.

The particular range of interpersonal options at risk in a given register constitute the tenor of discourse available: the actual selections taken in a particular language event constitutes the tenor of that particular discourse.

The medium relationship in the situation predicts the selection of options in the textual component of the language code and mode of discourse. All media of communication have their organizing resources, resources which allow the communicator to structure the 'message', that is, to relate its parts to each other, and indicate importances. In language, this involves the relationships Halliday and Hasan (1976, 1985) have discussed under the heading cohesion. Reference, ellipsis, substitution, conjunction, and lexical relations, are the major resources which create texture in English discourse. Semological focus and prominence, realized in the English clause by way of theme and rheme and in the phonological tone group by new and given, are crucial resources which permit the user to start message units and indicate their highlights.

Figure 2 summarizes the relationships that I have been discussing amongst instantial situation, generic situation, register, and the tri-functionally arranged semological and syntactic systems, and a brief indication is given of phonological systems which are directly relevant in semological and gnostological realization. All systems refer to the codal cycle for English. I would hypothesize that any language (be it Catalan, French, Spanish, or Chinese) has systems which could be regarded as analogous or parallel. All languages and all registers within a language have to cope with experience, interaction, and medium organization. They do so in their own way.

Before I leave the matter of generic situation I would like to draw attention to Elissa Asp's paper 'Knowledge and Laughter: an approach to a socio-cognitive linguistics' presented to the XIII International Systemic Workshop. Asp points out that the

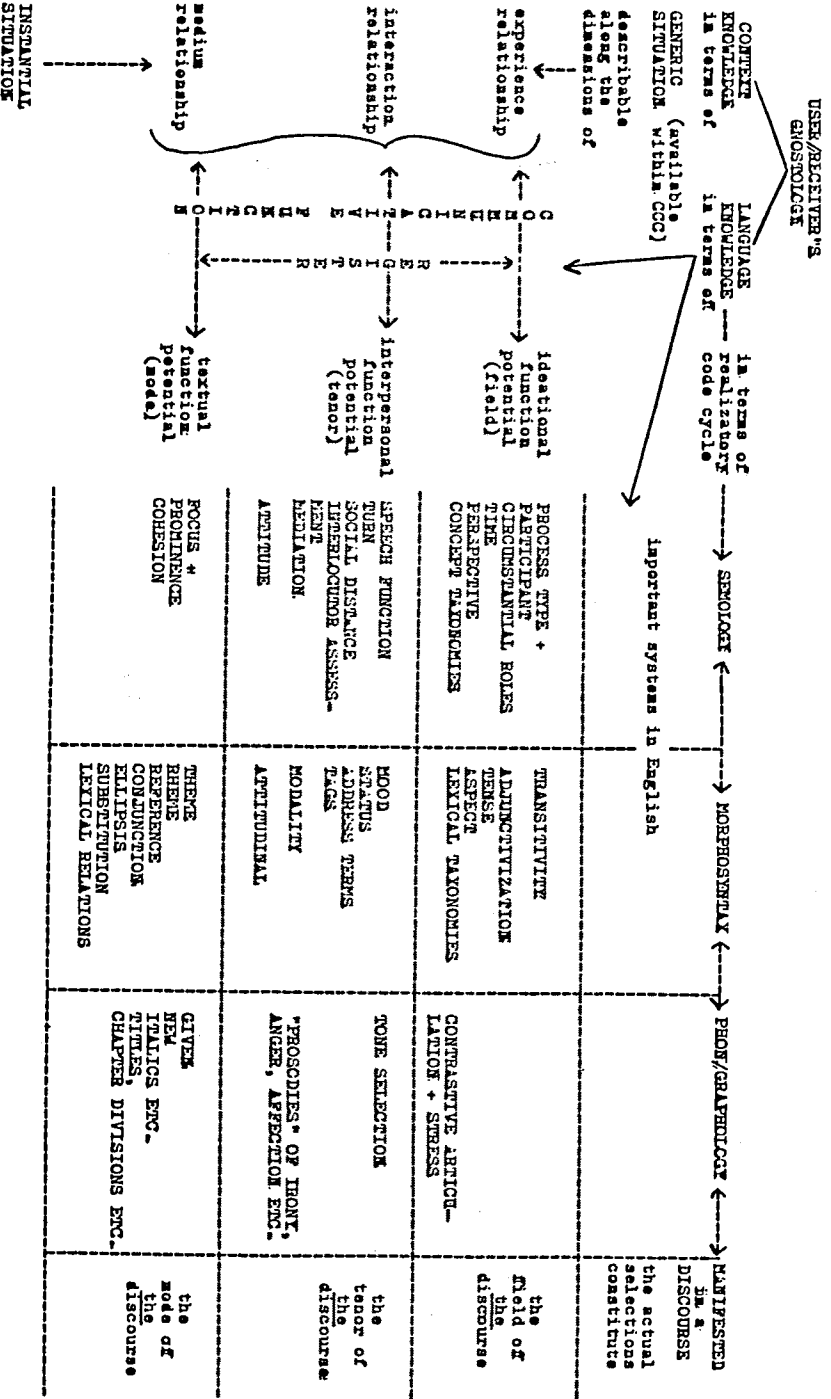


Figure 2

concepts of division of labour, the relations that surround the means of production and the legitimations made regarding such relations are key to the understanding and predictive systemic description of generic situations in a communicating community context. She argues that the first two not only describe the economic character of such a context but determine the 'availability and distribution of knowledge among individuals and groups within the community', and that the legitimations, as gnostological products of human activity, form the 'logic' of the division of labour and the relations surrounding the means of production and so are describable in terms of them. She rejects, however, any suggestion that this model presupposes a monolithic cultural stasis. Generic situations originating in past or contiguous communicating community contexts may be respectively maintained or imported even though existing economic relations and legitimations are in conflict with those of the engendering context. This is possible

because generic expectancies are part of the lived and living experience of members of the community; because the knowledge of individuals and groups within the community are connected moment by moment through instantial situations to past and present alternative ways of seeing, and doing in, the world.

The importance of instantial situations as the loci for both manifestations of generic expectancies and their abstraction is stressed because such renewals of connection 'render impracticable the sort of narrow determinism that mars some Marxist social thought!.

III

The reason why my associates and I are currently developing the gnostological aspects of the communication linguistics model is because we consider it important that linguistics be able to analyze and catalyze culturally key and culturally critical discourses, and to do so explicitly and consistently.

I have long maintained that any linguistics worthy of the name should have the theoretical and descriptive resources to cater for the knowledge at risk in literary discourse; and Elissa Asp (1983, 1985), Janet Dill (1985), Sada Niang (1986), and I (1984/forthcoming, 1986/in press) have all written,

in the last five years, on literary texts from the point of view of communication linguistics. Lynne Young has done extensive work on university teaching discourses (Young 1984, 1987), and Karen Malcolm (1985) on conversational discourse. What I am now interested in is work on discourses which are ideologically central, which represent our dominant hegemony with its incipient discrimination on the bases of age, class, gender, race, sexual orientation and notions of mental and physical 'normality'. It is crucial that we are able to make explicit what the discourses of our society implicitly demonstrate as the knowledge that our society lives by, the knowledge taken for granted in the 'noises we make with our faces in order to live'. If we are to be responsible as social and human scientists we have to be prepared, as Freud, Darwin, and Marx were, to turn over some stones, and explore what lies underneath them. It should not be that linguists neglect the 'content' or knowledge side of discourse, that 'people know what they are talking about', because this might bring them into the political or cultural firing line.

I believe that all science should be of use. Some extraordinary claims have been made for linguistics. The philosopher Ernst Cassirer wrote in 1945,

In the whole history of science there is perhaps no more fascinating chapter than the rise of the new science of linguistics. In its importance it may very well be compared to the new science of Galileo, which in the seventeenth century changed our whole concept of the physical world.

What he had in mind was European linguistics' insistence on the primacy of relations and systems of relations, that relationships create and define objects, not vice versa. This means ultimately that in order to study humanity it is essential to study the various systems by which men and women and their culture organize and give meaning to the world. And if linguistics, reputedly the most advanced of the social, behavioural, human sciences, is to justify the claims that have been made for it, then surely in addressing its object, discourse, it must have a goal which includes being of use in helping humankind to so understand itself, become so self-aware, that it improves its ability to avoid disaster and to recognize its universality. In Gregory Bateson's idiom we need to replace that purposive but partial consciousness which so often leads to life destroying

mistakes with a genuine systemic wisdom (c.f. Bateson 1972).

Like most here, my life has taken place in the continuous context of human, social disaster. My own catalogue starts with the Second World War, the Holocaust, then the Malayan Emergency, the Mau Mau, the Suez Affair, the Hungarian Uprising, the Korean War, the Gulag Archipelago, the Vietnam War, the Nigerian Civil War, the Six Day War, the Great Proletarian Cultural Revolution, Czechoslovakia's short-lived Second Spring, the might of the affluent West winning easy 'away' games in the Falklands and Grenada, the Soviets losing in Afghanistan, the persistent pain of Ireland and South Africa, the Iraq-Iran War, famine in half the world, conspicuous waste in the rest, destibalization in Central America of the weak by the strong, terrorism met by state blessed terrorism, the devastation of tropical rain forests to provide a cheaper hamburger in the United States; and I saw Nick Colby being ostracized by many during the Ninth International Systemic Workshop on this very campus five years ago because he offended hegemony by presenting a culturally critical discourse for our attention.

Yes, this has turned out to be a sort of secular sermon, and I know that for some of you I have been preaching to the converted. But if we are not to be truly trivial and uninteresting it really is time we took seriously what Hjelmslev called the 'prescribed goal' of linguistic theory: humanitas et universitas (Hjelmslev op. cit. 127). We can play our part in the search for a genuinely systemic wisdom.

The network of relations we and our work enter into is very extensive and it is our meaning and our lives:

No man is an island, entire of itself; every man is a piece of the continent, a part of the main. If a clod be washed away by the sea, Europe is the less, as well as if a promontory were, as well as if a manor of thy friends or of thine own were: any man's death diminishes me, because I am involved in mankind (John Donne, Devotions XVII meditation).

*In both meaning and wording section II relies heavily on Gregory 1986/in press, and Asp 1986/in press.

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INVITED LECTURE

THE COCKROACH SYNDROME: PHONOLOGICAL AND SEMANTIC
STABILITY THROUGHOUT THE MILLENNIA

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One of the most observable traits of human behavior is the tension of opposing elements. This can be seen in linguistics in the matter of opposites and the dual nature of lexical items: love-hate, good-bad, large-small. Distinctive features balance the pluses and the minuses. The opposing elements that I will discuss tonight have to do with stability and changeability. It is a commonplace among linguists that languages change; they are always in a state of flux. It is also evident that some things remain stable at the same time. Otherwise, the change would be so chaotic that people would not understand each other from generation to generation. A study of the phonological and semantic changes of Hittite to present-day English shows that both of these opposing features can be identified throughout the centuries. This is not to say that English descended from Hittite in a direct line. But they both came from the same origin, so they have structures in common. So much so, that one can identify words with sounds and meanings that are similar enough to be recognizable, even after some 4,000 years distancing.

In comparative linguistics we deal with language change. We spend most of our time looking at how /p/ changes to /f/ and if it doesn't, what are the circumstances in the environment that account for the exceptions. With good analysis we note that following /s-/ the /p/ does not change to /f/, but it remains /p/. If /p/ remains /p/ throughout all of the related languages, in all circumstances, this is boring, and we tend not to write lengthy articles or books about that kind of stability. Perhaps this is why our perspective on distancing is not always balanced with the recognition that some things, like the cockroach, do not effectively change their shape, even after several millennia.

In natural history it is well-known that some creatures, such as snails, pill millipedes, and fungus gnats, besides our ubiquitous cockroach, have kept their essential shapes for eons. Fossils are the evidence of this similarity. Similarity, however, is not always a help in determining genealogical relationship. In biology there are homologues which have a common origin, but may not appear to be similar, such as a horse's leg and the flipper of a whale. The forelimbs of people, porpoises, and bats are classic examples of homologous structures. Analogues, on the other hand, may appear similar, but do not have common origins and structures.

The wings of birds and insects share some resemblances but do not come from the same origin. There are many examples of disturbing coincidences, such as the hairy moth and the fur of animals, which are not related. Indeed, comparative anatomy has taught us a great deal about "similarities" and "differences" (Gould 1980, 1983). Metaphors and similes which are carried too far, of course, are ridiculous. Words are not creatures like cockroaches, we all know. The metaphor merely points us to consider the perseverances of language through the ages.

In language studies it is a commonplace that there are similarities in related languages which result from common ancestry, such as 'foot' and 'Fuss'; and there are similarities in random languages which are fortuitous. Skillful comparativists are fond of displaying examples which appear to have no similarities, but descend from a common etymon. Meillet offered us Armenian *erku* 'two' which is reflected from IE *dwō (or *duwō), and he laboriously traced out the proof of the connection (Meillet 1924 [1967]: 46-47). With written records, etymologies can be sorted out to a large extent, but when there are no historical records, such as for the American Indian languages, the attempt to identify cognates is hazardous. With less certainty, how far back we can move in time, remains a question. To deal with this I proposed a study using languages with historical documents to explore the question of how long words or morphemes retain their essential shape and meaning (Key 1985a)¹. I chose Hittite because of its time-depth and because there is a fair amount of excellent material available. There are many questions about language change that we can ponder as we compare the structure of the Hittite language and the similarities and differences we see today in contemporary languages that come from the same origin as Hittite. Questions of longevity will deal with: what classes of sounds and categories of meaning are maintained? What classes of sounds are more likely to cause changes in contiguous sounds? As languages separate, how long do they retain similarities? Are structural similarities more stable in grammar than in phonology? How far back can the comparative method be reliably used?

After studying related languages for many years and working with cognate sets from several families of recently-recorded American Indian languages, I concluded that basic vocabulary is the framework of a dynamic system which remains intact over the ages. Metaphorical language, slang, idioms, and poetic expressions, on the other hand, form a static system which is more easily altered.

In the physical realm, systems are considered as: dynamic and static. Dynamic systems are open systems, which are always incorporating new material and energy into their systems. They are constantly changing and constantly developing. But, interestingly enough, dynamic systems retain their shape. An open system has regulating mechanisms which maintain it. Static systems, however,

lose their shape with interruptions. An example of such a system is a fountain of water. If something interferes with the flow, the shape is altered. Who of us has not thrust our hands into a fountain to watch it change its form and be diverted into other shapes?

In the linguistic realm, basic morphemes constitute the building blocks of dynamic communicative systems. The basic lexical items have to do with the basics of life: body parts and natural phenomena, words that have to do with perceptions that emanate from the sensory systems of the speakers of the language. Basic morphemes occur extensively in related lexical items. For example, a short morpheme for 'water/wetness/liquid' usually can be found in related languages, in words such as: rain, river, flow (run), bathe, damp, juice, swamp, watering hole, arroyo, stream, creek, and so on. Not only do these morphemes remain stable, but they are often found in combination. With 'drink', the result is 'beverage'. With 'red', the result is 'blood'. The names of body parts are a rich source of extended vocabulary. 'Foot' combines to form 'path, ground, foundation, below' and even other body parts: 'ankle, leg'. But derivative meanings do not constitute a basic word list. 'Tongue' is a basic building block, but 'tongue' meaning 'language' or 'dialect' is not basic. Body parts are so closely related to perceptual configurations, that one is reminded of the chicken and the egg dilemma. 'Round' is sometimes inseparable from 'eye'. 'Angle' is inseparable from 'ankle'. Language, as an open, dynamic system is always incorporating new material and creating new combinations.

Before we look at Hittite I will mention one other basic assumption that is crucial in observing stability and change in the course of language history, and this is the matter of inner relationships. Sounds and meaning do not change in isolation; they change (or remain stable) in a system of sets and classes of things, flourishing in a network of interacting elements. Here we can remind ourselves of the concepts of symmetry and asymmetry which we all have observed in the languages we work with. The principle of equilibrium keeps things in balance. Several scholars in science have used the term 'homeostasis', in discussing the self-regulating properties of living processes, borrowing and extending the word which Walter B. Cannon introduced in 1939 to explain the oxygen concentration in the blood. But Grinker (1956: 162, 226) warns not to treat stability in homeostasis "as an absolute stability, but as dynamic and relative", and notes the paradox: it is stable, and yet it cannot be rigid. Linguists are increasingly concerned with the processes, not the bits and pieces. It is a world of relations of ongoing movements. It is not a linear world, but a world of many things going on at once. All these separate systems are successfully integrated in a progressive continuum of human interactions. Several dimensions are overlapping, intermingling, intertwining (Key 1980:31). Now

let us take the perspective of longevity to see how equilibrium is maintained.

English and Hittite comparisons

Let us go back some 3,500 years ago, to this ancient language Hittite, which was spoken in Asia Minor, northwest of the "cradle of civilization". It is the best known of the subfamily of languages in Anatolia that belong to the Indo-European (IE) family. Other languages of the area provided loanwords to this group, and these borrowings add to the complications in sorting out correspondences. Nevertheless, much progress has been made--enough to permit this test of longevity. My procedure was to approach the Hittite word lists as though I knew nothing of the historical work done in IE. I made two lists--one with resemblances to English and the other list with resemblances to Spanish. I worked as we do with the American Indian languages--having only contemporary descriptive information. The first step can be called a simple inspection, just a gathering of possible sets that can be analyzed. The criteria for "similarity" is rather loose and is based on experience with things that are pertinent for comparisons. Here we are reminded of Bender's (1969) still relevant discussion. I tended to be on the conservative side because I assumed that there would be many changes due to the great distance in time. In the semantic area especially, I tended to stay fairly close to the actual meanings and ignore possible related meanings. On further study, when compiling the word list presented here, I accepted wider semantic relationships when the evidence seemed solid. As Sturtevant and Hahn say, (1951:88), "Familiar etymologies have a great advantage!" The initial word lists that I gathered for the 1985 article included a little over forty words in both the English-Hittite and the Spanish-Hittite lists. Since then I have expanded the study somewhat, deleting some words and adding still others. I still consider this a working list from which only preliminary observations can be made. The next step was to try to identify which of the sets are actually cognate, in that the members of the sets have been shown by the comparative method to belong to the etymon that has been recognized by scholars of Hittite and IE. The state-of-the-art in comparative Hittite put certain limitations on the success of this verification. For example, Puhvel's first volume of the Hittite Etymological Dictionary includes only the letters A, E, I. The University of Chicago project (Güterbock and Hoffner 1980, 1983) has published L and M. So the material for verifying etymological connections is limited. Thus, a quantitative study of which sounds occur more frequently is limited. Nevertheless, enough cognate identifications can be made to show that even after about 4,000 years (adding the time-depth of proto IE), some sounds and some meanings are stable and recognizable. The list presented here treats only English and Hittite. It is more difficult to find etymological verification for Spanish, so I have left that for another time.

The present list has eighty pairs, and I emphasize here that I do not consider this a cognate list, but rather a work list of possible or probable cognates. Four of the Hittite words are repeated, thus making a total of eighty-four entries. The four examples are: palm/flat, tame/dominate, cardiac [k]/heart, mega-/much. In the initial stages of comparative work, before sound correspondences are clearly identified, one does not know the difference between loanwords and genetically related words. Scholars who specialize in IE will probably recognize the loanwords because of the extensive historical information available for other ancient languages, such as Greek and Latin. Since this is not a comparative study, per se, this information is irrelevant at this point. What is important is that these learned borrowings are words used in daily conversation and qualify for the test of longevity. Parenthetically I will note here that it is not unusual for comparative considerations to be set forth on the basis of such a limited list. Shafer used seventy-nine sets in his comparisons of the Aruaco family of Indian languages in Colombia (Shafer 1962).

The references in the following list refer to the Hittite material: G-H = Güterbock and Hoffner; H = Hoffner; P = Puhvel; S = Sturtevant; S-H = Sturtevant and Hahn. The reference P84:29 is read as: Puhvel 1984, page 29. I have included some as P87, which refers to our recent discussions and includes material from his etymological dictionary which is not yet in print. The meaning of the Hittite word is the same as the English, unless there are following differences and/or additions².

English-Hittite (h = ḫ)

p-
palm (hand) palhis 'broad' S42:42, P87 (See flat)
pan- (whole, all) pankus 'all, whole' S36:115, Buck 49:920
pastor pahhss- 'protect, shepherd' S42:36
potable, porridge pas- 'drink, swallow' S42:53
pyrotechnic pahhur 'fire' S42:36

t-
take da- H67:87, S42:43
tame damass- 'press, shut in, oppress' S42:51, S-H51:61
teat tita(n)- 'breast' H67:24
tree taru- also 'wood' P84:29

k-
cake kukku H67:28
call kalleš- H67:30
cardiac (heart) kard- H67:48 (See heart)
kill kuen- also 'strike' H67:81, S-H51:38, 55
kiss kuwaš- H67:52, Buck 49:1114
(re)cognize kaneš- H67:53

b-
ball purpura- 'clod, lump' H67:20, P84:382

d-
daddy attas 'father' S42:40, H67:74, P84:224
dark dankui- H67:34
dominate, tame damass- (See tame)

g-
guttural kuttar (?) H67:61; ku-ut-tar 'neck, strength'
S-H51:42, 58

j-
genuflect genu- 'knee' H67:25
jasper yaspu- P84:504

f-
flat, palm palhis 'broad' S42:42 (See palm)
foot pata- H67:25

v-
vestment, wear wess-, wass- 'put on clothes' S42:59,
Buck 49:393

θ-
three triyala S-H51:15

s-
saliva iššalli- H67:83; issalli- P84:380, S36:63
seal šiya- H67:78
seven ši-ip-ta-mi-ya S-H51:30
sinew išhunau- H67:81; ishunawar also 'bowstring' P84:403
sip šarap- H67:81
circle hurki- 'wheel' H67:98; also 'ring, wind' Cf. wheel
Cf. kaluti- 'circle', originally 'spun line' P84:284
sit, set eš-, aš- H67:81, S42:54, P84:291
skewer, spit iskar-, iskar(r)a-, iskar(r)iya- P84:416
spear, spit (see skewer) išpatar H67:83, P84:445, 450
spray, spread isparnu- P84:444
stand istanana- 'altar' P84:461, 465
star haster P87
stay istantai- P84:464

h-
hang gank- H67:48
heart kard- H67:48, P84:231 (See cardiac)
hill kalmara- H67:49, 60
horn karawar H67:49

[h] wheel (circle) hurki- H67:98, also Puhvel 'ring, wind'
 what ku-it S-H51:22
 why ku-wa-at S-H51:15
 who, whom ku-iš, ku-in S-H51:15, 57

m-
 mega- (large) mekki- 'many, large' H67:56, S-H51:30
 melliferous milit- 'honey' H67:49
 melt marra-, marri- G-H83:180 (Cf. IE 'grind')
 (pro)minent (forward) meni 'face' S42:39
 molar, mill malla- 'grind' H67:47, S-H51:44, G-H83:125
 mortal, murder mer- H67:34, 'die'
 much, mega- mekki- 'many, large' H67:56, S-H51:30
 my, me -me, -mi-, -ma- 'I' S-H51:44, G-H83:215

n-
 naked nekumant P87
 name laman G-H80:31
 nana hanna- 'grandmother' H67:74, S42:40; anna- 'mother'
 H67:74, P84:55
 new newahh- 'renew' S42:39; newa- H67:61
 night nekut- P87, S42:27
 not natta S42:57
 now kinun(a) H67:62; nu 'sentence connective' S-H51:40, 108

l-
 lallation lala- 'tongue, say' H67:89
 lap, lick up lip-, lilipa-, lellipa- 'lick' H67:54; G-H80:71
 lavatory (cf. 'lake') lahwī, lahwi 'pour' S42:63, 67,
 S-H51:46
 lily alal- 'flower' H67:41, P84:32
 lipectomy, lipo-suction (fat) li-pa-a-an-zi 'smear' (with
 reference to 'fat') S-H51:27
 long daluki- H67:55, S-H51:61

w-
 warm war- 'burn' H67:29
 water watar H67:96
 we ū-e-eš S-H51:24, 104
 wet witenant- 'water' H67:96
 wind hwandas S42:41; huwant- P87
 wine wiyana- H67:99, P84:378
 wolf ulippana- H67:99
 word werya/e- 'name, invite' S42:64

y-
 yoke yuga- H67:99; iuka- P84:495

Medial or final consonant

albino (white) alpa- 'cloud' [related to Latin albus
S-H51:46] H67:31, S36:20
ante- (before) ha-an-za, ha-an-ti-i 'in front, before'
S-H51:23, 42
eat et-, at- S42:55; ed-, ad- H67:37, P84:315
equivalent annawali- H67:37; P84:64
interior anda 'within, inside' P84:76
is es-, as- S42:55
osteopath hastai 'bone' S42:57

English phonemes are: p t k b d g ċ ĵ f v θ ð s z š ž h
m n ŋ r l w y. Some of these do not occur in this preliminary
list: ċ ð š ž. These could be added if additional words were
found to exemplify them. English /z/ occurs only in final posi-
tion in 'is' and '(re)cognize' (listed under /k/). Distribution
patterns constrain the possibilities: English /ŋ/ never occurs
initially, and in the word lists it only occurs finally, in 'hang'
and 'long'. English /h/ is only found in initial position.

English spelling gives hints that would not be available to
those who work with preliterate languages. Thus, it is easy to
identify 'knee' (here 'genuflect') with Hittite genu-; 'new'
and 'sinew' with Hittite words that also contain a /w/; 'night'
with the silent "gh" relating to the Hittite /k/. English silent
/l/ in 'palm' probably relates to Hittite /l/.

Reduplication is a common process in Hittite, and this con-
struction continues into modern English in 'lallation' and 'lily'.
An example of longevity is seen in the WH- words which are re-
flected with regularity, if one takes into account the English
spelling: what, why, who, whom (listed under /h/), with Hittite
words beginning with /k-/. This would be of interest in comparing
the morphology and grammar, which I am not attempting to cover
here.

The structure of a language can be seen in the configurations
formed by the inventory, but observations should not be limited
to these patterns. Relationships are seen further in distribu-
tional patterns, and apparently some distributional patterns main-
tain their shape over the millennia. The voiceless stops p t k
are amply represented; the voiced series b d g much less so.
There is only one example of medial /b/, and this may reflect the
"labial gap", which is well-known in IE. Sturtevant and Hahn
(1951: 17, 26, 63) comment on the limited distribution of /b/ in
Hittite. It is perhaps no coincidence that the alveolar /d/
occurs more often than its counterparts, in that alveolar sounds
in general occur more frequently. In fact, the occurrence of all
the alveolars in medial and final position is in sharp contrast

to initial position, except for /s/. Thus, t d n r l occur in medial and final position two to four times as often as in initial position. We should take into consideration that very often final segments may be suffixes--not necessarily part of the base morpheme. Though, of course, they may be stem-final formatives, or whatever.

A very significant limitation in distribution occurs with the liquids, and I believe that this probably reflects a structural configuration of great depth. For the most part, the sounds that are exemplified here occur in word or morpheme initial position. It is startling, then, to note that no examples occur with /r/ in initial position. Sturtevant and Hahn (1951:25) had noted that r is never initial in Hittite words. In medial and final positions, however, English /r/ occurs in sixteen examples; medial and final /l/ occur in nineteen examples. This is extraordinary, relative to the medial and final distribution of other sounds.

The large representation of /s/ in initial position is probably not accidental. Sturtevant and Hahn (1951:66) speak of the "s Movable", which from early times was "extremely common both as initial and as final phoneme of a word, and sometimes it was initial or final of a consonant cluster in one of these positions..." As noted above, the /s/ is also of interest because it does not occur with the usual frequency in medial position that other alveolar sounds occur. While about a dozen entries exemplify the initial /s/, it only occurs in five examples in medial and final position, and four of those are in medial consonant clusters. Along with /s/, two other phonemes occur more frequently in initial position: /m/ and /w/. These labial sounds had another affinity in Hittite, according to Sturtevant and Hahn (1951:44): "Hittite has several pairs of equivalent suffixes beginning with w or m ..."

Theoretical explanations of the phonology

There is a history of observations on phonological relationships that may be looked at here. The following does not attempt a complete history, rather it is a review of some of the ways that scholars have looked at the relationships of natural classes of sounds in phonological systems. As will be seen, there are useful applications to the Hittite longevity problem.

The first work that I will mention here is that of Ferdinand de Saussure (1915) who was concerned with the degree of aperture and the most sonorous part of the syllable. In 1916 Wilhelm Geiger dealt with assimilation in Pali, a middle Indic dialect of the 6th century B. C. He set up hierarchical relations as such: Mutae - Zischlaute - Nasale - l, v, y, r. Hankamer and Aissen further discuss his rankings as "the sonority hierarchy" (1974: 131, 143). Trubetzkoy proposed a list of sounds that should be permitted in an international artificial language (Trubetzkoy

1939)³. Presumably this would contain a balanced representation of the natural classes of sounds. For the historical record, I will also note the work in Poland which is discussed in an article by Bańczerowski. He states (1978:57), "The most comprehensive attempt towards the description and explanation of fortition-lenition phenomena was undertaken by L. Zabrocki (1951)." This early work treated the IE languages especially; Bańczerowski extended the theory to deal with Uralic languages, Finnish and Lappish.

Distinctive features, as presented in Preliminaries to Speech Analysis in 1951 (Jakobson, Fant, and Halle), became a focal turning point in dealing with classes of sounds. The notion of a description of an entity by means of the collection of its properties, is a very attractive concept, and we probably have not seen the full significance of comparing these constellations of features between languages. I found the theory useful in dealing with the "closeness" of labial and velar sounds which correspond in some language families (Key 1979b). In distinctive feature analysis, the p and k are brought together in the opposition of grave versus acute. There remain unresolved problems, however, in using the theory. For example, affricates are made up of two entities and cannot be described in the same way as single entities. Comparative linguists must be concerned with allophones and how they figure in split and merger. It is not clear how a distinctive feature analysis of the sounds of a particular language would handle [l] and [r] if these variants comprised a single phoneme in such a language. The limited distribution of Hittite initial liquids might be a case in point. Another problem of distinctive features is the matter of secondary articulations, or those modifications of sounds which seem pertinent in language change. Perhaps it is the mis-use of the theory along the way which has distracted us. Combining acoustic features with articulatory features without clearcut criteria, simply obfuscates. Including y and w indicates a lack of understanding of the phonetic character of these semivowels and their vowel counterparts. (Here is where the term vocoid clarified.) Putting aside the misuse of this much debated theory, it seems obvious that the basic notion of constellations of features could help in the understanding of a sound changing from p > f > h, for example. See Wheeler (1972) for a useful discussion of the capacities and limitations of this theory, with concern for the perceptual reality of the speaker and hearer.

The next study that holds great promise for understanding historical change was put forth in the same decade as distinctive features, and perhaps it was overshadowed for that reason. Eunice Pike, in 1954, published a study of sound change in two Mazatec dialects, using rank of stricture from Kenneth Pike's volume on Phonetics, (1943). The success of her analysis was due to her

recognizing subordination as a factor in applying the concept of rank of stricture.

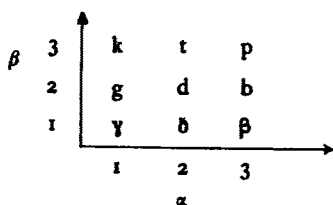
In the next decade William Labov (1963) published a study which still merits attention. He used the concept of classes of sounds influencing, in the segmental environment. Also important in this study was the recognition of a suprasegmental (stress) as a factor (Labov 1963:290; Labov 1972:122). This was the decade of the computer, and we began to see the enormous benefit that this tool could bring to linguistic studies in the way of quantification. Roberts (1965) did a computer analysis of phoneme frequency in English. Alveolars occur among the high-frequency phonemes (Roberts 1965:41).

The next study that I will mention here is that of another European scholar, Krupa (1970), who evaluated the phonological changes that have taken place in the Polynesian branch of the Austronesian (= Malayo-polynesian) family. He measured the consonantal changes in terms of several variables: place of articulation, degree of constriction, effective timing of central constriction, secondary shaping, and laryngeal action. These variables carry certain values according to their use in the Polynesian languages. He noted that some consonants are more stable than others: /h/ is the least stable, as it has been preserved either partly or fully in only three Polynesian languages; /p/ and /m/ are the most stable, as they have been retained in all of the languages. The following table from Krupa shows the retention rates (Krupa 1970:58):

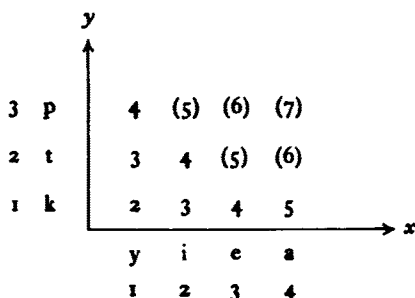
Retention Rates (in % of PPN Consonants)

h	w	ʔ	r	s	l	f	k	ng	t	n	p	m
.10	.14	.17	.41	.41	.59	.62	.86	.93	.97	.97	1.00	1.00

Also in 1970 Foley began to publish his theory of explaining relationships among the subparts of sets, on the basis of "weakening" and "strengthening" (Foley 1970:88). His concept of lenition is not based on phonetic definitions, such as "stop" or "fricative", but rather it has to do with nonphonetic terms such as strength or weakness (Foley 1970:88; Foley 1977:29). Further, he recognizes another dimension which he calls, respectively: strength alpha, and strength beta (1970:89; 1977:28-35). This is illustrated by combining the models (1977:33-34):



The distribution of these classes of consonants contiguous to various classes of vowels also produces certain strengths. These are considered weak and strong environments. The following table shows the relatively weak and strong environments of consonants and vowels (1977:99):



The combined strengths of /p/ and /a/ give the largest value. While Foley used this illustration to explain assibilation, I will point out here that it can also apply to the strong hold-outs of English resemblances to Hittite. Note in the examples in the word list of initial /p-/: all of the Hittite words begin with /pa-/.

These attractive and potentially useful concepts have been discussed extensively over the years. Roger Lass is one who has contributed significantly since the late 1960s, and his discussions are of particular importance because of his involvement with historical and dialectal changes in English. He emphasized the need to consider sonority in his 1971 article. So did Zwicky, who was approaching phonological hierarchy from the point of view of fast/slow speech and consonant clusters. His formula has often been referred to throughout these discussions (Zwicky 1972:277):

Vowels Glides [r] [l] [n] [m] [ŋ] Fricatives Stops

We cannot leave the discussions of hierarchies without mentioning Catford's work on "stricture types" (1977: Chapter 7), which brings us back to the notion of rank of stricture introduced earlier. In another study, he deals with the matter of

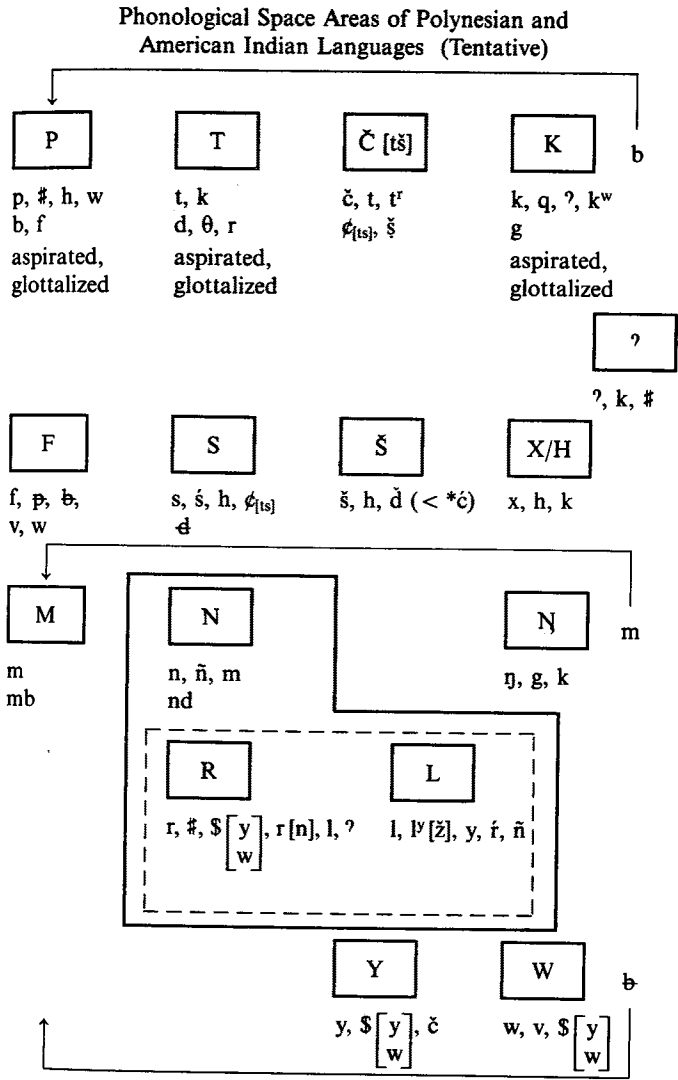
air mechanisms (pulmonic, glottalic, and oralic) and directionality in language change, with concern for "survivals" (Catford 1974).

The matter of suprasegmentals is seldom mentioned in any of these studies. An exception already noted is Labov (1963:290) who demonstrated the relationship of prosodic factors and the degree of centralization. Another study that takes into account the interaction of suprasegmentals and segmentals (in this case consonant clusters) is Bolinger's theory of intonation in English (Bolinger 1986:52-53). And we should not forget Verner's Law.

The recent work on universals at the Stanford Phonology Archive and UCLA is giving us some extremely useful information on the nature of language and implicational rules that will help in assessing phonological change and survival in comparative studies. Maddieson (1984) represents the UCLA Phonological Segment Inventory Database, which includes information on the phoneme inventories of 317 languages. The smallest number of segments is 11 (in Rotokas of New Guinea, and Mura-Pirahã of Brazil), and the largest is 141 phonemes in !Xū, a Khoisan language. The usual range is 20 to 37, and this is a good number to keep in mind in reconstructing proto systems. They claim that "comparative evidence indicates that small inventory size may be a phenomenon which persists over time" (Maddieson 1984:8). They have set forth a "modal" inventory suggested by the most frequently occurring consonants in the database (1984:12):

p,b	t,d	tʃ	k,g	ʔ
f	s	ʃ		
m	n	ɱ	ŋ	
w	l,r	y		h

This suggested inventory is reminiscent of the skeletal framework which I have been working with in comparative studies for the last decade or so. In the preliminary stages of comparing, one cannot know if "r" belongs to the /t/ area of phonological space, or the liquid /r/ area; one cannot know if "h" belongs to the /s/ area or the /k/ area, but the configurational framework reminds one of alternate possibilities. Early in the analyses when comparing, I am loath to posit proto forms. One must have sufficient understanding of the respective systems before reconstructing a hypothetical system (Key 1983). Hypothetical forms should not be reconstructed in isolation. So I found it useful to use a different symbol to remind myself of the yet-unknowns. The following chart is adapted from previous studies (Key 1984:29; Key 1985b:469):



The capital letter in a square box is a cover symbol for sounds which might be reconstructed with further study. The capital also indicates that more than one phoneme of that phonological space might be reconstructed; the reconstruction might be any of the sounds which are directly below the square box. This working chart of phonological space conforms quite nicely with the "modal" inventory suggested by the universals project. Modifications and secondary articulations are taken to be the variants that individual languages would innovate through the natural processes of the evolutionary changes. I consider it very important to visualize a configuration for each language: the languages being compared and the hypothetical language to be postulated. Sometimes the configurations are quite surprising--for their similarity as well as for their differences. I noted this in discussions of related languages of South America, where the closely related Tacanan languages had quite different configurations between them. But the proto Tacanan system appears quite similar to the proto Panoan system, reconstructed from languages which are more distantly related (Key 1979a:84-89). As far as vowels are concerned it is useful to divide the phonological space into three areas: front-high, back-high, and low.

Survivals of meaning from the time of the Hittites

The perseverance of basic linguistic structures through the eons is evidenced also in the semantic network of languages. It is the interlocking of sound and meaning that is the backbone of comparative linguistics. We have had more experience with phonology, and we can assume that there will be some similarities in the way we work, when we begin to look at comparative semantics. For example, we don't deal with sounds in isolation, or in alphabetical order. We deal with sets and the interrelationships of sets. In semantics we should expect that there will be classes of things and implicational rules that will become evident as these things are analyzed. There will be universals that have to do with the organization of reality, and the reflection of reality, such as onomatopoeic expressions; and there will be language specific categories. What happens in comparative studies is that basic morphemes are sifted out: if one enters into the files the total vocabulary of the several languages of a single, related family, the actual cognate vocabulary will emerge, resulting in a "core" word list. Well, of course there are complications, but basically that is what happens. It is not surprising, then, that the eighty sets in our worklist here, reflect some semantic features that are meaningful.

As a basis for discussion, I will use a proposal that I presented in 1986 as a way of looking at the semantic system of related languages. Though I developed the theory from working with American Indian languages, it is remarkably adaptable to the perseverations that can be seen in the English-Hittite word list. For a better understanding of lexical survival, I refer my

listeners (readers) to the complete article; here I will give a brief outline: I Kinship terms and pronouns, II Corporeal, III Space and time, IV The shape of language (shape morphemes: round, twist/meander, angle), V Composition, VI "Earth, Air, Fire, and Water", VII Perception.

As we look at the English-Hittite list, it is immediately apparent that basic human elements dominate the vocabulary, as body parts and kinship terms, as human functions and acts, and as perceptual reflections of time and space. When we contemplate earlier times, we see that archaeology has uncovered evidence of the preoccupation that early people had with the human body. Along with crude expressions, are the exquisite representations of animals and humans--graphic witnesses of the ability of those early artists to perceive shapes and configurations and depict these forms with skill. We have no reason not to believe that these forms are also reflected in the languages of the people. In the English-Hittite word list, the primacy of human beings in their environment is seen in well over half of the vocabulary; corporeal morphemes alone take up about fifteen percent of the vocabulary and another fifteen percent of the list is concerned with human functions. The overall picture shows that all of the domains that I suggested in the above outline are represented in the eighty sets. The importance of language is seen in three words: call, name, and word. It could even be said that belief systems are reflected in three of the four elements: fire, water, and wind (air).

Here I will mention a few of the semantic themes that stand out in this list. The reflexes that result from perception are exemplified; for example '(pro)minent' which is related to Hittite 'face'. In the IE etymologies, this morpheme occurs in words that have the meaning of 'jutting out, projecting' and include corporeal morphemes such as 'chin, jaw, cheek' and also 'mountain'. This is a configuration that is perceived--in either the body part or the natural environment.

Another shape morpheme has to do with 'roundness'; the circle with added dimensions becomes a ball, and this is very basic in nature, and, I believe, in language. There are a few words here that have to do with this concept: 'circle, wheel, lump, clod, ring, wind (a circular motion?)', but I haven't sorted it out yet. Puhvel indicated to me that 'circle' is not related to kaluti-, which has another history. A related shape concept that indicates a curving or circular motion is discussed in Puhvel (1984:34) under ali- 'wool', possibly a borrowed term, as seen in Hittite hulana-, huliyā- 'wool', which is root-related with hulaliya- 'wind, wrap'. Perhaps the problem could be resolved if all the words for circular shape and motion were brought together, as in the manner of Buck's (1949) discussions. This is all hypothetical, but following through semantic veins such as this might be revealing. Additional insights can be seen in studies of early

IE society. In a recent dissertation, Della Volpe (1986) has shown that in early IE culture, the 'round' shape was predominant in religious practices and in the formation of cities.

Güterbock and Hoffner (1980:21) list another shape morpheme--the blade. The word for 'tongue' is lala-, and among its other meanings are given 'blade (of knife)' and 'ingot (metal)'. I take these to be reflective of the configuration of the items involved. But la- apparently has another meaning. Or perhaps this is a homophone? Note the word for 'pour' (listed under 'lavatory'). It appears to have something to do with water or liquid. If this is correct, it could be appearing in other English vocabulary as: lake, lagoon, lachrymal, laguna, latrine, laver, lacquer (Hind. lākh), latex, ladle, lap, lampoon. Indeed, we may be witnesses of perseverances of very long standing.

Conclusion

The observations made here, on the basis of a list of eighty words can be summarized briefly: Stability in sound and meaning can be traced back at least 4,000 years; a small core of pertinent words is sufficient to find patterns; a pocket dictionary will provide the skeletal framework of a lexical system. For comparative studies, one does not have to reach over into esoteric meanings; closely related semantic concepts provide recognizable meanings. Basic semantic structures are built around corporeal terminology in conjunction with perceptual concepts; they provide a configuration that is recognizable. These summary statements result from working with a coherent semantic model, which is based on comparative studies (Key 1985b, Key 1986). I offer this theory to explain longevity and stability throughout language change. It is a simple and powerful explanation of the relationships seen in sound and meaning in genetically related languages. I hope that it will be tested and refined in various ways, by applying it to other language families.

Linguistics is a tool; it can be a powerful tool to discover and illuminate relationships about languages in contact. Comparative linguistics is a tool that is fully capable of dealing with the arcane relationships of the deep historical past, which have remained secret even in our enlightened age. To apply any scientific tool, one must explore in new territory. The uncertainties make it unsafe traveling. The challenges, however, are rewarding if one perseveres. I will end here with two quotations from distinguished colleagues who have preceded us--one from a linguist and the other from a computer expert. The linguist, Edgar H. Sturtevant, wrote the following note in the revised version of his Hittite grammar:

Many distinguished linguists seem to me excessively cautious about publishing a scientific conclusion before it can be finally established. I think that such pro-

cedure unnecessarily delays the progress of science. The one requirement is that before a conclusion is proposed, its author must think it through and make it harmonize with the available evidence. No scientific conclusion is final; every one of them should be held subject to immediate revision in the light of new evidence.

Sturtevant and Hahn 1951:16

The next quotation is from the developer of COBOL, the most widely used computer business language, retired Rear Admiral Grace Hopper, who spoke of change to a graduating class:

...there always will be change . . . It's to our young people that I look for the new ideas. No computer is ever going to ask a new, reasonable question. It takes trained people to do that. And if we're going to move toward those things we'd like to have, we must have the young people to ask the new, reasonable questions. A ship in port is safe; but that is not what ships are built for. And I want every one of you to be good ships and sail out and do the new things and move us toward the future.

Time, June 22, 1987

Notes

1. I have appreciated responses to my preliminary article in 1985; the correspondence and discussions with the following have been a source of pleasure and profit: Juan A. Hasler, Carleton T. Hodge, Henry M. Hoenigswald, André Martinet, and Elizabeth Uldall. I also want to thank Diane Enders for her editorial help. Special thanks go to Jaan Puhvel, who has been very generous in giving time to discuss the Hittite material. Naturally he is not culpable for errors.

2. After finishing this invited lecture, David Michael Weeks sent me his dissertation, which is the Hittite vocabulary of Buck's dictionary. This extremely useful material should be added to these references.

3. Elizabeth Uldall brought to my attention the Trubetzkoy article.

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PRAGMATICS OF INTERACTIONAL SIGNS:
A CASE OF UH-HUH'S AND THE LIKE IN JAPANESE CONVERSATION

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Although there is a recognized tendency among linguists to interpret propositional/referential meaning as being primary (and, therefore, worthy of linguists' attention), language in the real world is filled with utterances that either do not have an easily identifiable referential meaning or cannot be felicitously interpreted by a propositional meaning. This is the case in back-channel expressions such as un 'uh-huh,' huun 'I see' and other brief responses in Japanese conversation. These brief utterances have escaped linguists' scrutiny mainly because they are thought to be semantically marginal and insignificant. In contrast, I have found these back-channel expressions to be not marginal but, in fact, central to the flow of conversation. Furthermore, I believe their significance in creating a cohesive dialogue is not unlike the nearly invisible thread which holds together a string of pearls.

Recent studies suggest that conversation is a product of close cooperation between participants and its coordination is managed through strategies which include more than "sentences" theorized by linguists. To understand what actually happens in conversation, attention must be paid not only to the speaker but to the listener, and not only to the grammatical unit, sentence, but also to seemingly meaningless brief utterables. Much as, again to use the metaphor of a string of pearls, one would not, in analyzing how the ornament composes its beauty, ignore the unassuming string which holds it together while focusing exclusively on the shiny pearls. This study focuses on the string, i.e., addresses the pragmatics of listener back-channel expressions in Japanese conversation by analyzing their frequencies, interactional functions and discourse contexts.

Although, in the past, conversation analysts have noted characteristics of Japanese conversational interaction, studies have often been plagued by data which is ad-hoc, or by accounts which are anecdotal. The data used for this study consists of twenty videotaped dyadic conversations taped in Tokyo in May, 1985. The pairs selected were of the same sex (10 female and 10 male pairs each) and were all college students residing in Tokyo. Subjects identified each other as friends and they had had so-called casual conversation on numerous occasions. The filming took place in a television studio on a university

campus in central Tokyo. An unattended video camera was used and the subjects were left alone in a room after being instructed to talk as naturally as possible about anything they liked.

So as to minimize the degree of subjects' awareness of being filmed from being reflected in our data, with the assumption shared among conversation analysts in general (for example, see Duncan and Fiske 1977:37) that speakers grow accustomed to being recorded and that unnatural speech decreases with time, the initial two-minute segments were categorically excluded, and the following three-minute segments were selected as data relevant to this study.

Before discussing the specifics of back-channel expressions in Japanese casual conversation, the concept of back channel itself must be clarified.¹ In the present study back channel is defined strictly in the context of turns within the turn-taking system and refers to occurrences of listener behavior where an interlocutor, who assumes primarily a listener's role, sends brief messages and signs during the other interlocutor's speaking turn. The turn is defined in the present study as: a fundamentally solo-speaking unit recognizable by participants as carrying some referential and/or functional meaning. Moreover, in order for an utterance to be considered a turn, both talking and non-talking participants must recognize that the taker of the turn says something and thus his/her activity is recognized as such while the non-talking partner assumes a complimentary listener's role. We refer to back-channel occurrences under discussion as "turn-internal listener back channels."

Beyond verbalized uh-huh's and brief comments, various aspects of nonverbal behavior may be called back-channel expressions--such as direction and duration of gaze, self-adaptors, gesticulation and vertical and horizontal head movement. In the present study only clearly visible punctuated head movement (both vertical and horizontal) is examined.² Laughter is another utterable frequently observed in our data. As suggested by Schenkein (1972), laughter plays an important role in communication, and we identify the listener's laughter during the other interlocutor's turn to be a case of back channel.

Having identified specific phenomena investigated in the₃ present study, let us turn to an examination of data set (1).³

- (1) 1. A: Dakedo/
but
'But'

2. A: are atsuruyoku ga tsuyoi n da yo ne hora/
that pressure S strong NOM BE FP FP you-see
'there's great pressure,'

- In data set (1) 4 cases of B's back channel are found during A's turn, and 2 cases of A's back channel during B's turn. Some back-channel devices are strictly verbal as in the case of B's back channel (2), soo 'I see'; some are strictly nonverbal as in A's back channel (1). Some listener back-channel behavior combines verbal and nonverbal signs as in B's short utterance (1), Aa soo ka hoo ka uun 'Oh, I see, I see' accompanied by three repetitive head movements. Back-channel

strategies in Japanese involve various brief phrases with or without head movement.

The overall frequency of turn-internal listener back-channel expressions across 40 Japanese speakers numbered 871. Back-channel expressions, then, occurred roughly once every 4.13 seconds during the conversation. Out of the 871 cases, 703 were identified as back channels which occurred in the immediate neighborhood of recognizable pauses or breaks in tempo made by the current speaker. The most frequently occurring types among all back-channel expressions found in our data were brief utterables such as un 'uh-huh,' honto 'really,' and soo 'I see' which totaled 614 out of 871 (70.49%). Head movement accompanied these brief utterables 62.87% of the time (386 out of 614). In the second most frequent category, vertical head movement (which does not accompany verbal expressions), was produced 164 times (18.83%). Head movement occurred either independently or with verbal back-channel expressions 63.15% (550 out of 871) of all back-channel expressions. The laugh category occurred 93 times.

As shown above, a relatively high frequency of back-channel behavior is observed in Japanese. But why do listeners feel a need to send back-channel signals in the first place? What motivates a listener to use back-channel devices? Among previous research three different orientations are found in characterizing the functions of back channel. First, back-channel expression functions as a signal of attention and understanding, as stated by Kendon (1967:44) that it "appears to do no more than signal that he is attending and following what is being said." Second, it is for facilitating auditor participation, as pointed out by Duncan and Fiske (1977:202-203) in saying that back channel "...appears to provide the auditor with a means for participating actively in the conversation, thus, facilitating the general coordination of action by both participants." Third, the function of back-channel expression is identified as a "continuer" as proposed by Schegloff (1982). According to Schegloff (1982), there are two usages of vocalizations such as 'uh-huh,' namely, (1) as continuer and (2) to pass an opportunity to initiate repair.

More specifically, Schegloff characterizes back channel as a "continuer" through which the listener encourages the speaker to continue with the talk. Schegloff justifies his interpretation by arguing that the listener passes up opportunities for other-initiated repair during moments in which the listener could potentially take turns. The notion of sequence and the procedure for investigating conversational phenomena in sequential context, however, although useful as analytic devices, sometimes suffer from over-simplification which may obscure important features in the interactional complexity of situated talk.

The characterization of sequencing fails to capture back-channel behavior that co-occurs with the speaker's verbalization when there is no pause. For example, in data set (2) cases are found where a back channel occurs clearly within the speaker's turn when a pause is not immediately expected.

- (2) 1. A: Huransugo shika tsukatcha-ikenai/
 French only must-not-use
 'You aren't supposed to speak anything but French.'
2. A: dakara huransujin no sensei ga/
 so Frenchman LK teacher S
 'So our French teacher,'
- H
 (B:1 Un) (B:2 Un)
 yeah yeah
 'Yeah.' 'Yeah.'
3. A: Nihongo dekitemo burikko shite sa/
 Japanese can-even-when pretending do-and FP
 'although he understands Japanese, he pretends (not to)'
- H
 (B:3 Un)
 uh huh
 'Uh huh.'
4. A: Huransugo shika shaberanai-de sa.
 French only speak-NEG-and FP
 'and speaks only in French.'
- H
 (B:4 un)
 hum
 'Hum.'
5. A: Yaru hito iru jan./
 do person there are TAG
 'There are such people, you know.'
- (B:5 Un) (B:6 Un) (B:7 Un)
 hum hum yeah
 'Hum,' 'Hum,' Yeah.'

In data set (2) B's back channel (1), (5) and (6) all occur internal to the utterance as speaker A continues to talk. At the point where B's back channel (1) and (5) occur, 5 and 6 syllables are observed respectively before the identifiable pause occurs. In our data of 20 Japanese pairs, 100 cases (11.48%) of back-channel behavior occurred clearly within the speaker's turn not at or in the vicinity of any identifiable pause. This observation implies that back channel in Japanese, at least in the data examined, is used in an environment where other-initiated repair is not expected. Thus back channel can not simply be characterized as a "continuer." Passing up an opportunity for repair becomes irrelevant since such opportunity never existed in the first place.

Although characterizations proposed in studies mentioned above reflect how some back-channel behavior functions in conversational sequence, this study proposes a more complete set

of functions based on a broader notion of communication.

- 1) continuer
- 2) display of understanding of content
- 3) support toward the speaker's judgment
- 4) agreement
- 5) strong emotional response
- 6) minor addition, correction, and request of information

These functional characteristics are derived from various aspects of conversation. First, "continuer" is justified on the basis of a turn-taking system and specifically on the basis of foresaking the opportunity for repair. Displaying an understanding of content is identified when confirmation of the listener's understanding is felt necessary. Naturally sending back channel does not guarantee real understanding of the content. It only expresses the listener's claim that s/he understands. Support and empathy for the speaker is observed in those instances where the speaker makes an evaluative statement to which support or empathy is felt necessary by the listener. Agreement is identified when the speaker's turn performs a speech act of questioning or question-like statements. Back channel here performs a specific speech act of agreeing, and this is done without the speaker relinquishing the turn. For example, A's back channel (1) in data set (1) may be interpreted as mild agreement. Strong emotional response is identified when the listener sends exclamatory phrases or laughs which indicate more than simple continuer, understanding or support. Minor additions, corrections and requests for information are observed when a listener makes a comment that either alters or changes the quality of the currently activated information. These functional features do overlap and it is best understood that each turn-internal back channel performs more or less one of the features proposed. All these functional characteristics come under the more general category of interactional process, or "recipient design" (Sacks, Schegloff and Jefferson 1974). What back channel ultimately aims to achieve is a kind of recipient design initiated by the listener. Other general terms such as "empathy" and "rapport" also describe the overall effect that back channels achieve.

As the last item of discussion let us now focus our attention on the context in which back-channel behavior occurs. First, in the majority of cases (82.13%) turn-internal listener back-channel behavior occurs near or at the speaker pauses. Secondly, these pauses are marked by frequently occurring linguistic devices. One such device is the final particle. For example, in (1) ne occurs twice in (1.2) and (1.6), and sa twice in (1.5) and (1.10) at or near the pause. As noted by Martin (1975:914), ne(e) is used to involve both speakers and listeners in what is being said. Ne, which Uyeno (1971) calls a "particle of rapport," solicits listener response--either in the form of the back channel or in the form of a change of turn.

The particle sa that appears in data set (1) also serves to solicit listener response not so much in the way a tag-question-like ne does, but in the sense that sa which functions as an emphatic marker in part, marks the phrasal or clausal boundary that is likely to be followed by a short pause. Another frequently occurring final particle is ka, an interrogative particle that may be used for self-reflection and self-questioning. The use of ka as a final particle softens the statement since it shows the speaker's doubt or lack of confidence in the message content.

Particle endings in general then seem to signal, together with the pause itself, the moment where some sort of feed back--which is likely to be in the form of back-channel--may be relevantly performed in the sequence of the conversation-in-progress. Particle endings marked 40.84% (281 out of 688) of all contexts where back-channel expressions occurred near or at identifiable pauses. Auxiliary verb endings also function similarly to final particles. Auxiliary endings such as deshoo 'isn't it right?' and ja-nai 'isn't it?,' marked 54 of the 688 locations where back channels occurred. The discourse context in which listener response was overtly solicited by final particles or auxiliary verb forms characterized 48.69% (355 out of 688) of back-channel expressions. The fact that the Japanese language provides for devices such as final particles not only at the end of the sentence but also sentence-internally makes it possible to overtly mark the potential moments for back-channel expressions. The linguistic property inherent in Japanese is indeed suitable to the way the Japanese monitor conversational interaction by sending back-channel expressions.

Thirdly, even when no particles are attached, pauses occur at the major clausal and sentential junctures--such as at the juncture of subordinate clauses as in (1.7) and (1.9). Note first that subordinate clauses which are marked by conjunctions such as ba as in (1.7) also function to mark the ending of an utterance. In such cases the matrix clause may not appear at all. Although these subordinate conjunctions serve conjunctive functions, they appear in casual conversation in deleted sentences, where the main clause is not expected. Such ending leaves some space for the listener to fill in his/her own interpretation of the main clause and thereby provides interactional options for both participants. Another ending of utterance often observed is that of the gerundive -te form of the verb. The -te forms which appear without stress and with falling intonation also function as grammatically complete points. In Japanese conversation, clauses marked by endings as pointed out above function as traditional units of grammatical sentences. Out of 688 locations where back channels occurred, 351 (51.02%) occurred at major grammatical junctures, some accompanied by sentence final particles and/or head movements.

Data set (1) also reveals an interesting nonverbal behavior on the part of the speaker at the point where turn-internal listener back channel is observed, namely, head movement that co-occurs at or near the final syllable of the speaker's utterance. For example in (1.6) a case is observed where a back-channel device follows the speaker's head movement. Similar cases of head movement were observed quite frequently across all data we examined. Out of a total 688 back channels, 38.08% occurred in the context of the speaker's head movement.

In conclusion, in terms of the context in which back channel occurs, recurring patterns emerge; 1) usually the listener back channel occurs during the pause between phrasal and clausal units of utterance within the speaker's turn, 2) some clausal units are marked not only by standard sentence ending forms such as verbs but also by gerundive forms of the verbs and conjunctive particles, 3) the back channel often appears at these clausal and phrasal boundaries marked by sentence-final particles such as ne and sa, and finally, 4) the sentence-final syllable which precedes listener back channel may be accompanied by head movement.

As a final note some drawbacks to this study should be mentioned. First we artificially excluded the participant's behavior during the prolonged inter-turn pause, which eventually has to be incorporated before any final conclusions are reached. Secondly, only selected verbal and nonverbal signs were examined leaving other signs in darkness. Examination of other important aspects of conversational interaction and identification of potentially relevant interrelations that may exist among different signs and strategies must be addressed in the future. Thirdly, our data is limited not only in numbers but also in terms of genre. Whether or not what is discovered in this study of casual conversational discourse is applicable to other genres awaits further investigation.

Despite these shortcomings, the present study has shown that seemingly meaningless utterables in conversation occur frequently in relevant discourse contexts and that they are indeed "meaningful"--and therefore considered communicative "signs"--in real-life conversations. The back-channel strategy, although in general not conveying propositional meaning, constitutes a significant part of conversational interaction, --and just as the thread that connects the pearls should not be slighted when examining how a string of pearls holds together, back-channel expressions should not be slighted if a researcher is interested in understanding the realities of everyday language.

The study reported herein challenges earlier studies on conversation management by scrutinizing carefully collected verbal text produced by 40 speakers. More importantly, this paper argues that the inquiry into the meaning of language

is far from complete unless linguists integrate pragmatic information--such as (1) frequencies and characteristics of actually occurring signs, (2) discourse contexts of the signs--including participants' behavior preceding and following the utterance, and (3) aspects of the linguistic forms that point to interactional functions--into the analysis of language of ordinary talk.

NOTES

1. Yngve (1970:568), who introduced the term, states that back channel is observed "when the person who has the turn receives short messages such as 'yes' and 'uh-huh' without relinquishing the turn." Attempt is made in the present study to describe when the state of "in-the-turn" starts and ends, without which it is difficult, if not impossible, to identify some of the back-channel-like utterances observed in the conversation.

2. Vertical head movement is defined as a clearly visible vertical head movement which accompanies at least one occurrence of lowering the head immediately followed by a movement of raising the head approximately back to the starting position. Horizontal head movement is defined as movement which involves turning the head either left or right immediately followed by a movement turning back to the starting position. Excluded from this analysis are head raising, head lowering and other subtle movements. Head movement was counted and recounted before we positively identified it as such. First, the researcher identified cases of head movement. Approximately 6 months later, the researcher viewed the tapes again, this time with an assistant (a non-linguist native speaker of Japanese who was coached to point out clearly identifiable head movement as defined in this study). When faced with disagreement as to whether or not head movement occurred, the researcher and the assistant discussed the issue and reached agreement. There were, however, two cases of head movement both the researcher and the assistant could not quite decide, which were not counted as cases of head movement.

3. Following abbreviations and transcription symbols are used: /=recognizable pause; .=utterance final contour; H=vertical head movement; BE=copulative verb, be; FP=final particle; LK=linker (linking nominals); NEG=negative; PASS=passive morpheme; Q=question marker; QT=quotative marker; T=theme marker; TAG>tag questions including jan, ja-nai, etc.; S=subject

4. The reader may argue that A's back channel (2) does not occur during B's turn and should therefore not be included in our analysis. We included, however, back channels that occur immediately after the current speaker stops talking and are followed by a pause before the next turn starts. This decision was made because such back-channel response gives the impression that it is the listener's response to the current speaker during his/her turn and it occurs before a turn transitional period starts. Back-channel-like utterables during prolonged

inter-turn pauses and turn-internal lapses, however, are excluded, since their primary function seems to be that of fillers.

5. Although it is beyond the scope of this paper, it should be pointed out that Japanese send frequent back channels (871 times) compared with 428 times among Americans. Comparable American data consisting of videotaped conversation of 20 pairs was collected in a manner similar to the Japanese data. See Maynard (1986) for the contrastive analysis of back channels in Japanese and American conversation which analyzes data of 6 Japanese pairs. See Clancy (1982) and Mizutani (1983) for related discussions.

6. Although there were 703 actual cases of back channel, sometimes different types of back channels appeared in the identical discourse context. Thus only 688 actual locations where back-channel expressions occurred were identified.

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II

GENERAL LINGUISTICS

STRATAL DIVISIONS AND NON-EXHAUSTIVE ANALYSIS

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Over the past three decades or so, a variety of network grammars of different types have been developed and elaborated. Differing in notation and in minor details, these models have also differed in the overall structure assigned to language. On the one hand, stratificational grammar, as its name implies, posits clearly separate though connected levels of structure, identified by the various tactic patterns. In many ways these correspond to levels of structure posited by numerous traditional structuralist approaches. In sharp contrast, word grammar, as described in Hudson 1984, is a variety of relational network grammar that is characterized, among other things, by a tendency to minimize the number of different structural levels that it posits. A striking example of this tendency is the refusal to distinguish a structural level of morphology distinct from the level of phonology. Hudson's views on this matter are sufficiently distinctive that it would be good to quote the relevant passage to be sure that there is no confusion.

This being so, there is never any uncertainty as to whether or not some entity is a phoneme, or sound segment. By implication, then, any constituent of a word which is not a phoneme must be a morpheme, if we want to classify word-parts as either one or the other. So I am not denying that a distinction may be made between phonemes and morphemes.

What I am denying is that there is any need for a distinction in the grammar between the levels of analysis called 'morphemic' and 'phonemic', like that made by Hockett and his followers. For example, a word like *cats* can be taken as having two parts, the second of which is not a morpheme, but rather a phoneme - an analysis which is incompatible with the strict division of levels of American structuralism.

This view is just an extension of the previous discussion, where I showed that the elements out of which a word may consist need not all be of the same type (e.g. they may be words which can occur on their own, or bound morphemes such as affixes). I am now claiming that the parts of a word may be phonemes or morphemes, and that these may be mixed up together (e.g. in *cats* the first part is a morpheme and the second a phoneme). In other words, a word may consist of any entity which (ultimately) is a string of one or more speech sounds.

(Hudson 1984, pp. 54-55)

This position has been criticized by Napoli (1986) in the following passage.

Another kind of problem is that WG denies certain distinctions, yet these distinctions are not disallowed by the mechanisms or principles of

the grammar. For example, on pages 54-5 Hudson argues against distinguishing between a phonemic and a morphemic level - yet such a distinction can easily be made in WG simply by introducing the entity 'morpheme' and is, I believe, implicit in diagrams such as the one I gave above for *understand*. [See Figure 1, below.] Furthermore, when we consider the kinds of entities that have typically led to this distinction of levels in other theories, we find no satisfactory discussion. *-ing* is treated neither as a word nor a phoneme - it has no model whatsoever. But if Hudson must set aside *-ing* into a new category of entities that are neither words nor phonemes, is not that category precisely the one we would have if we admitted a difference between the two levels? The point is, if morphemes are to be precluded, there should be some theory-internal principles or mechanisms which preclude them.

(Napoli 1986, pp. 190-191)

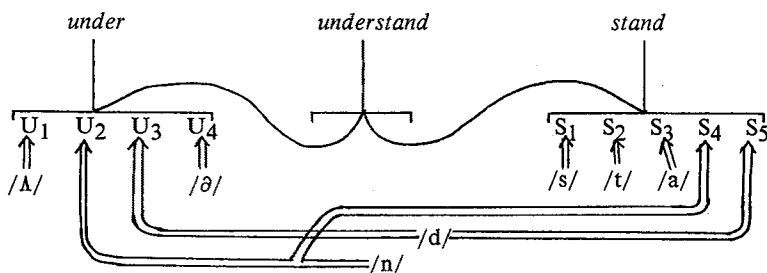


Figure 1

When we set these two passages together, we can see that Napoli and Hudson are talking right past each other. Napoli assumes that the existence of a distinct category of entities called 'morphemes' requires that there be a distinct structural level, the morphemic. Hudson recognizes the entity, but does not recognize the level. This view is sufficiently singular that we should consider it a bit further so that we are clear about just what it means. Virtually all linguistic theories have treated inventories of structural elements of a given type as inseparable from the structural levels on which they are to be described. The existence of a set of x-emes infers the existence of an x-emic level of some kind. The particular definition of that level may differ substantially from theory to theory. Witness, for example, the variety of ways the phoneme and the phonemic level have been defined. But the fact remains that whatever one's definition of the phoneme, the very existence of that little beastie infers the existence of a level upon which it exists. For each different kind of beastie that one identifies, there will be a different level of structure. Clearly Napoli shares this assumption when she speaks interchangeably of morphemes and the morphemic level, as well as when she speaks of different kinds of entities leading to a distinction of levels. But it is precisely this assumption of the inseparability of item and level that Hudson does not share. Indeed, it is only by breaking this association that Hudson can say that he recognizes a distinction between morphemes and phonemes, but not a distinction between morphemic and phonemic levels. Both types of beastie coexist peacefully on the same level.

Napoli's assumption rests on a further assumption, rarely stated and more rarely questioned, that at any given structural level, a string can be decomposed exhaustively into the invariants that are the structural elements appropriate to that level. These elements are arranged according to the structural principles of that level (by some theories made explicit as the tactics), which principles are in at least some cases in conflict with the structural principles at adjacent levels. A part of Hudson's task has been to show that the morphologic and phonologic structural principles can, in fact, be stated in such a way that the two levels could be described together. This view, of course, is in sharp contrast to the stratificational approach, which maintains the separation of the levels. I wish to explore this difference in approaches a bit further, offering some additional evidence suggesting that the two levels should, in fact, be described together. I will do this by arguing that it is not the case that a string can always be decomposed exhaustively into a set of invariants that are the minimal structural units of a particular level. Specifically, I will argue that a morphologic analysis of English will in some cases leave a residue of parts that have no claim to morphemic status other than being a residue. That is to say, they have neither semantic distinctiveness nor grammatical pertinence as structural units.

Let me begin with an example (Figure 2) that I use fairly often. This set is not atypical of derivational paradigms in that it contains certain obvious morphologic patterns and certain equally obvious structural gaps. The question I begin with is whether the members of this set are to be considered monomorphemic or bimorphemic. The paradigmatic arrangement suggests a bimorphemic analysis, and this is the answer frequently assumed. But if these forms are bimorphemic, it should be possible to create forms to fill in the observed gaps, forms that will be interpretable by native speakers of the language. That is to say, if *terr-* is a morpheme and if *-id* is a morpheme, each possessing an identifiable semantic distinctiveness or an identifiable grammatical pertinence, then the morphologically correct combination of those two forms should yield a form that can be interpreted and understood by native speakers who are confronted with it. Yet for both of these gaps it turns out that the artificial form cannot be recognized and interpreted. Native speakers presented with **terrid* do not associate it with *terror* and *terrible* at all. If anything, they associate it with *torrid* or *terrestrial*. Similarly, **candible* is associated with *cannibal*, though in a very confused and uncertain way, but never with *candor* or *candid*.

horror	horrible	horrid
terror	terrible	
candor		candid

Figure 2

There is, however, one point of identification that can be made by native speakers, and that point is of considerable importance for my argument. Whatever meaning native speakers assign to **terrid*, they consistently identify it

as an adjective. They may be unable to assign any meaning to the element *terr-*, but they do recognize the suffix *-id* as an adjective formative. A similar phenomenon accounts for the pervasive confusion over **candible*. While *cand-* is uninterpretable, *-ible* is recognized as an adjective forming suffix. The connection with *cannibal*, however, leads to the confusing conflict between an association with a noun and the recognition that the form is that of an adjective. These facts suggest that *-id* and *-ible* are clearly morphemes, having well recognized grammatical pertinence, but that *terr-* and *cand-* are mere residues, not being recognizable morphemes at all, unless, of course, one is willing to accord such status to whatever is left over after all the ordinary morphemes have been identified. It may be a mere matter of definition, but I am not especially enthusiastic about using the word *morpheme* in so loose a manner. Perhaps we can simply say that the evidence suggests that it may not always be possible on the morphologic level to decompose a string exhaustively into elements, all of which are grammatically pertinent or semantically distinctive.

Let me pause at this point and insert two methodological comments. In the first place, the process I have been describing should in no way be interpreted as a confusion of morphemic analysis with morphemic productivity. I am not considering whether the two artificial forms I have described could be produced naturally by native speakers. That is an issue of productivity, with which I am in no way concerned. Rather I am asking whether one of the new forms, **however created**, can be recognized by native speakers. For forms to fail this latter test calls the morphologic analysis into question as a failure of the former test would not.

The second comment has to do with the test I applied. I am relying, and will in my further arguments rely on performance indicators to evaluate analyses. I wish to use as evidence not merely a formal analysis of the strings in question, but any indicators that can be found in native speakers' use of or reaction to forms. Indeed, it is when we look at the creative processes that native speakers apply to the various forms of the language that we find the most striking evidence of the unequal status that must in some cases be assigned to the various constituents of words. Let us turn, then, to the principal example that I wish to discuss here.

For most of its life as an English word, *marathon* was a simple loan word, obviously monomorphemic. Several years back, however, some enterprising fund raiser came up with the idea of running an extended television program devoted to the solicitation of funds for some more or less worthy cause. Entertainers were induced to devote their time and sometimes questionable talents to keeping the audience amused and attached to the screen, the better to receive the periodic appeals for money, appeals which were to be answered by telephone calls to the television station to record one's pledge of a donation. Eventually someone added the bright idea of enabling donors to fulfill their pledges on the spot by charging their contributions to their little pieces of plastic. My point here is not to describe for you the sins of American television, but to remind readers of the name given to such programming. Because it occurs on *television*, and because, like a *marathon* race, the program lasts a long time, the name given to it is *telethon*. Not content with this terminology, Americans have devised contests among school children to see how many books they can read over an extended period of time. Such an event

is a *bookathon*. And now we have fund raising projects that have people walking a long distance, with sponsors making donations based on the number of miles walked. Such events are *walkathons* or *hikeathons*. If the distance is covered by bicycle, of course, the event becomes a *bikeathon*. The process is clearly productive, and more of these creatures are appearing every year.

What is important for us, however, is what has happened to the word *marathon*. No longer a simple, indivisible morpheme, *marathon* has had extracted from it the element *-athon*, which now means something like "an extended event or contest which, depending on the context, may be conducted for fund-raising purposes."¹ Yet the extraction of the element *-athon* has done nothing whatsoever to the status of the remaining word part, *mar-*. *Mar-* has no assignable meaning: it certainly does not mean "foot race," which is the only semantic distinctiveness that could be assigned to it. Nor does it have any grammatical pertinence. It cannot be combined with other forms and it has no grammatical significance whatever. It is quite simply a residue left over after the element *-athon* has been identified as a structurally significant unit. One could, of course, argue that *-athon* is a separate morpheme in words such as *bikeathon* and *bookathon*, while being non-morphemic in *marathon*; but such an argument would have a very hard time explaining how these other forms could have been created if some semantic distinctiveness and grammatical pertinence had not been assigned at the outset of the formative process to the *-athon* of *marathon*. There is simply no other source.²

Let us turn now to a consideration of how the facts just discussed might be represented in a network grammar. For purposes of this discussion I will use the reasonably familiar network notation associated with stratificational grammar. Consider the diagrams found in Figure 3. Under 3a we can see *marathon* diagrammed as an instance of the lexeme *marathon*. *Marathon* is also diagrammed as being composed of a sequence of phonemes, about which there is nothing at all remarkable. Here I will not go into the decomposition of the semantic structure further than to note that a full discussion of this example would require a description of how the semantic analysis, whether stated componentially or by other means, allows the extraction of a particular part of the meaning of this lexeme together with a particular part of the phonologic structure. Stated differently, a full semantic analysis will be a prerequisite to an understanding of the process of morphologization of a part of a unitary morpheme. My concern here, however, is not with the process of morphologization, but with its consequences for the structural analysis. The result of the process is the identification of *-athon* as an element having independent morphologic status of its own. At this point, a network would have to look something like that shown in 3b. One should note in all of these diagrams that I have intentionally omitted any tactic connections, since the number and nature of those connections is a part of what is at issue. A sub-part of *marathon* has now been broken off and is treated like a separate morpheme, now forming one constituent of *bookathon* and *bikeathon* and *readathon* and the rest of these forms. This much of the diagram is straightforward. But what is of immediate concern, and what is not obviously straightforward, is the treatment of the rest of the word. What happens to *mar-*? The diagram in 3b leaves it untouched. But there is an alternative.

Consider the diagram in 3c. This diagram is identical to that in 3b except for the treatment of *mar-*. In 3c *marathon* is composed of an element

mar- followed by an element *-athon*. Each of these two elements in turn is composed of a string of phonemes. We must ask whether there is any reason to prefer one description to the other.

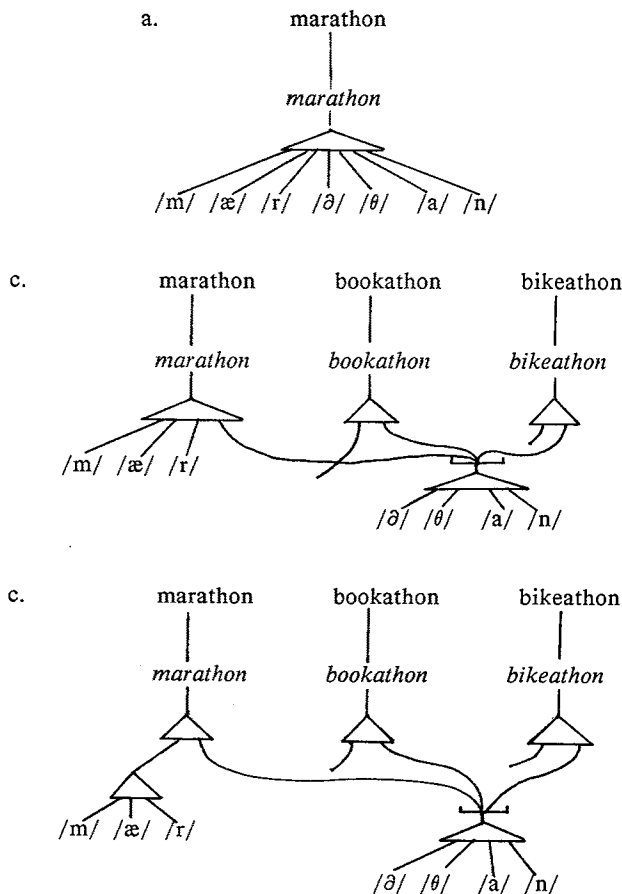


Figure 3

I would suggest that it is appropriate here to follow a general principle of stratificational grammar which prohibits the introduction of descriptive structure in the network unless a grammatical analysis actually reveals that structure to be required for the clearest, most economical description (Lamb 1966a, p. 3, Lockwood 1972, pp. 58-59). This principle is but a specific instance of the empirical principle of Hjelmslev (Hjelmslev 1961, p. 11) or the simplicity/clarity principle of Firth (Firth 1957, p. 2). In the example under discussion, diagram 3c adds structure not present in diagram 3b. Diagram 3c treats *mar-* as a separate constituent element of *marathon* in a way that diagram 3b does not. If there is justification for this treatment, diagram 3c is to be preferred, and diagram 3b is to be rejected. But if within the network structure one can find no justification for treating

mar- as an element with independent constituent status, then diagram 3b is to be preferred as the more appropriate description of the relevant structure. As far as I can see, the only structural claim that can be made for *mar-* is that it is what is left over when *-athon* is extracted. It enters into no other combinations, appears to be totally incapable of entering into any other combinations, and has no recognizable or identifiable meaning of its own, no semantic distinctiveness aside from that of the entire word. In sum, there is nothing whatever to be said on *mar-*'s behalf except that it is a residue, and diagram 3b captures that information readily enough.

The conclusion, then, appears to be that there is no grammatical structure justifying the inclusion of the extra network structure to be found in Figure 3c. That being the case, one concludes that 3b is the preferred network description for this structure in a network grammar. But if Figure 3b is the preferred description, we face, under traditional descriptive standards, a problem with the constituency of *marathon*. The composition bracket for *marathon* includes four elements: the phonemes /m/, /æ/, and /r/, and the morpheme *-athon*. As constituents these four elements have equal status, but their grammatical status is anything but equal: three are phonemes and one is a morpheme. Yet if 3b is the preferred representation of the structural relations of *marathon*, then some accommodation of this incongruity will have to be made within the theory. The obvious solution, it seems to me, is exactly the one contained in the quotation with which I began this paper. Constituency is a category that applies to whatever structural level is under consideration, while grammatical status will be defined in terms of the fundamental relational categories of the model. Applying this distinction to the present example, we identify the various constituents of *marathon*, assigning them all to the same structural level. It makes no sense, then, to ask whether this level is morphologic or phonologic. No distinction of levels is made. Indeed, it appears possible that we may be able to reject totally the kind of separation of levels that appears most prominently in a network model like stratificational grammar. But to reject a distinction of levels is not to reject a distinction of grammatical categories. If we ask of various entities what kinds of relationships they participate in within the total network system, it becomes possible to identify different grammatical categories without any reference to levels. In this we are again merely following a principle well established within the tradition of network grammar, Hjelmslev's observation that "a totality does not consist of things but of relationships" (Hjelmslev 1961, p. 23). We conclude, then, that it should be possible to distinguish morphemes from phonemes on the basis of the kinds of relationships they enter into without linking this distinction necessarily to a distinction of levels.

From here we can return to the question asked at the beginning of the paper. If grammatical categories and structural levels are not necessarily interlocked, does the evidence support the intermixing of different grammatical categories at the same structural level? While much more evidence must be weighed and evaluated before a definite conclusion can be reached, I submit that the evidence that I have presented here suggests strongly that different categories can and sometimes must be mixed within a unified rather than stratified system. That is to say, the evidence presented here, as it has been analysed, does offer support to Hudson's postulated structure for a grammar of English.

I would conclude with a few comments on a matter that today probably needs to be classed with the history of linguistics, but that still casts a shadow over much contemporary work. One can recall the phonologic dispute arising out of Morris Halle's *Sound Pattern of Russian* (Halle 1961), in which Halle argued that the classical phonemic level should not be recognized as a separate level of linguistic structure. The form of the argument, it will be recalled, was quite straightforward. There is in Russian a general rule of regressive voicing assimilation that applies across obstruent clusters. In some cases the obstruents participating in the alternation are separate phonemes, so that the assimilation operates as a morphophonemic rule. But in a few cases there are gaps in the phoneme inventory of Russian, gaps that cause the rule in these instances to operate as an allophonic alternation. That is, for some obstruents there is a morphophonemic rule of voicing assimilation while for other obstruents there is an allophonic rule of voicing assimilation, yet the rule is the same in both instances. Halle concluded that a generalization could be captured if the morphophonemic and allophonic alternations could be collapsed into a single rule, and that this could be accomplished only by abolishing the classical phonemic level as a level of linguistic structure.

Much ink was subsequently spilled over this question, defending the phonemic level (e.g. Lamb 1966b), attacking the phonemic level (e.g. Postal 1968), or trying to create a hybrid compromise (e.g. Schane 1971). But through all of these discussions ran the fundamental, shared assumption that the existence of a distinct phoneme inferred the existence of a distinct phonemic level. This, of course, is exactly the assumption made by Napoli, as cited at the outset of this paper. But if this assumption turns out to be invalid, as I have been arguing, then the entire question, which still casts its shadow today, turns out to be a dispute over a non-issue.

The view that Hudson has put forward is certainly a singular one, and one that may have extensive consequences for linguistic theory. But the evidence I have presented here suggests that it very likely is correct. The potential implications of this view of linguistic structure therefore warrant the more extensive study that will be required finally to validate the proposal.

FOOTNOTES

1. Words formed in this manner have heretofore all contained a semantic element something like this. But recently a local financial institution has named its automatic banking machine *Bankathon*. How this word is to be analysed or related semantically to the others is not clear.
2. To say that there is no other source is, however, not the same as to say that there is no other possible mechanism. Hudson (personal communication) has made the interesting suggestion that words like *bikeathon* are created through the *isa* relationship in word grammar. Under this relationship, *bikeathon* would be created as a copy of *marathon*, the copy having the first syllable overridden by the word *bike*. The way in which

this proposal would be worked out in the network is not clear, but the analysis still preserves my essential contention that elements of different status would be mixed in the same word.

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CYMRIC LANGUAGE AND LOGIC

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Logic, Language, and Welsh

In the history of logic in Western philosophy (compare, for example, Dumitriu 1977 and Bocheński 1970), the formal development of categorical logic may, for all practical purposes, be traced from Aristotle's Organon (see Barnes 1984, vol. 1:chapters 1-5). While certainly such predecessors as Socrates and Plato had been instrumental in the development of the system, it was Aristotle who collected the work that had come before and set forth the form and theory of categorical logic.

Of course, Aristotle was not simply developing some abstract system of reason -- he was attempting to gain insights into the meanings behind utterances in language. Thus, not only do philosophers trace the history of categorical logic back to Aristotle, but linguists as well trace the history of grammar (in the West) back to the same source (see, for example, Lyons 1968:270-74, Robins 1968:chapter 2, and Dinneen 1967: 72-113). Moreover, the formal analysis of reason in categorical logic has traditionally been the same as that of grammar.

In logical as in grammatical analysis, the analyst first considers the subject and then considers the predicate -- that which may be said about the subject. For example, in a sentence such as All cats eat mice, All cats is the subject and eat mice is the predicate. In the terms of categorical logic, we would say that All cats is the first term of a proposition, in which all members of that term may be included in the class of entities in the second term -- entities that eat mice. In grammatical analysis, we would say that All cats is the subject noun phrase and eat mice is the predicate phrase, made up of a verb eat and a direct object mice; and we could refer to the relationship between the subject and the predicate as that between the topic and the comment (as in Hockett 1958) or between the theme and the rheme (as in Halliday 1978).

Within the exclusively structural approach of transformational generative linguistics (see Chomsky 1957, 1965), we can still see the logical/grammatical categorization of Aristotle in the analysis of a basic simple sentence, in which the sentence is broken down into the subject term and the predicate term. The subject is thus defined as an immediate constituent of the sentence marker, in a manner making full use of the Platonic definition by division (see Dinneen 1967:76-79). On the other hand, in linguistic frameworks that make more use of functional information, such as tagmemic analysis (for example, Cook 1969) and stratificational grammar (see particularly D. Lockwood 1972:293-95), the basic practice of dividing the sentence into constituent parts, while it may not be seen as sufficient for the definition of terms, is nonetheless an integral part of analysis.

In order to arrive at meaning in reasoning and in language, Aristotle developed the categorical syllogism, an array of logically sound propositions -- well-formed simple sentences -- that could be used to deduce conclusions. For example, given the major premise that All cats eat mice (= "All cats are included in the category of entities that eat mice") and the minor premise that Tabby is a cat (= "Tabby is included in the category of cats"), we can conclude that Tabby eats mice (= "Tabby is included in the category of entities that eat mice").

Aristotelian categorical logic is based upon the grammatical structure of the Greek language, which happens to resemble to that of English in the basic order of elements in the sentence -- the subject + verb + object (SVO) order. The SVO order suggests the Aristotelian type of subject-predicate sentence analysis and logical proposition, for the subject (the topic, the theme) is stated first, in the prominent position of the sentence/proposition. That which comes after this first element may then be seen as a predication (a comment, a rheme) upon this subject.

Let us consider, however, a language with a different sentence order. Welsh is a VSO language, and the absence of the neat dichotomy between subject and predicate has caused considerable problems in the treatment of the Welsh sentence in structural analysis, particularly that of transformational generative linguistics (compare R.M. Jones 1963 and Awbery 1976:5-6, for example). Although the VSO sentence structure is not at all rare among the world's languages (see Steele 1978), current logical and grammatical systems do not appear to accommodate it.

With the verb coming in the position of emphasis at the beginning of the sentence, the Welsh proposition structure would properly consider the action or state of the utterance as the primary topic, with the comment consisting of the participants. To the Welsh speaker, then, the proposition noted above could be paraphrased as "There is eating performed by all cats upon mice." Indeed, such an arrangement suggests the multiple-predicate expression "V(s,o)" common in symbolic logic (see, for example, Kretzmann 1965:120-24), although the symbolic approach is not as well suited to the type of linguistic application suggested here as is the categorical, which concentrates upon the basic logical/grammatical elements as part of a proposition/sentence (for linguistic applications of symbolic logic on a more abstract plane, see Zierer 1972).

Thus, the application of Aristotelian categorical logic, based upon the SVO sentence order, may not be appropriate to such VSO languages as Welsh. Taken within the context of the Sapir-Whorf hypothesis on the correlation of language and culture, conclusions derived from Hellenic syllogisms -- syllogisms based upon the syntactic structure of the Greek language -- should reflect the outlooks and attitudes of the Greek culture, and not necessarily those of the Welsh.

Cymric versus Hellenic Logic

Over the past few years, I have been developing a Cymric logic -- a logical system derived from the grammatical structure of the Welsh language (see especially Richards 1938, Williams 1980, and M. Jones and Thomas 1977) and potentially applicable at least to some extent to other VSO languages. To illustrate the workings of a Cymric syllogism, as opposed to a Hellenic (Aristotelian), let us consider the sample syllogism

above in the structure of the two logics, as in figure 1.

The Hellenic syllogism works on a set of rules in which there are three terms each used twice to refer to exactly the same class, negation (or more properly exclusion) may be used twice and must appear in the conclusion where it is used, a term distributed in the conclusion must be distributed in the premise in which it appears, and the term repeated in the premises must be distributed at least once. Distribution, a central aspect of Hellenic logic, means that each item in the one term is known to be included (>) or excluded (>) from the other term (it is distributed -- "d") or it is unknown (it is undistributed -- "u").

The Cymric syllogism, on the other hand, has a matrix form following a different set of rules entirely. Each term is used twice except for the extra term, which must be the verb of identity, stated in the Welsh *bod* 'to be' (which is extremely important in the Welsh language -- see Williams 1980:92-101). Distribution is replaced by definition, in which a term is definite (represented by the definite article *y* 'the') in the absolute, deictic, grammatical sense. Other principles include that of partitive identity, in which the *bod* statement must show that the subject term (S) is partitively a member of the complement term (C), which is definite -- as represented by the Welsh *o'r* 'of the'.

There are, of course, a great many other rules to setting up the Welsh proposition and syllogism. To attempt to include all of them here would go far beyond the scope of this paper, but those which are important to this paper will be explained as they occur. Perhaps the most striking difference between the Hellenic and the Welsh systems, though, is determined by the syntactic structures of the two languages: The subject-predicate arrangement of Greek lends itself to notions of inclusion or exclusion of the subject relative to the predicate, while the verb + subject + complement arrangement of Welsh lends itself to the establishment of separate relationships among verbs, subjects, and complements (used here as a more general and appropriate term than objects).

The insights to be gained into the linguistic structure of Welsh, into the logical implications derivative from this structure, and in a broader context into the Sapir-Whorf hypothesis can best be illustrated through some fallacies. After all, what is true is true in the natural world, and it is essentially the same natural world for the Welsh as it is for the Greeks. Likewise, fallacies are fallacies because of restrictions in the natural world. In accordance with the Sapir-Whorf hypothesis, however, the way we view the natural world will differ to some extent depending upon the linguistic/logical system through which we filter our data. What differs, then, in fallacies is our interpretation of what makes them false, and here is where we may test the efficacy of a Cymric logic for Welsh as opposed to a "universal" Hellenic logic based upon Aristotle's *Organon*.

First let us consider the fallacy in figure 2. In Hellenic terms, this is a case of the undistributed middle -- the term shared by the two premises (the middle term) is undistributed in both. From the viewpoint of the Aristotelian Greek, the explanation for what makes this syllogism false, then, lies in the relationship between premises. While there is nothing wrong *per se* with the proposition that Tabby is a cat -- the problem is that we do not know whether or not this cat in the minor premise is one of those that eat potatoes in the major premise, because

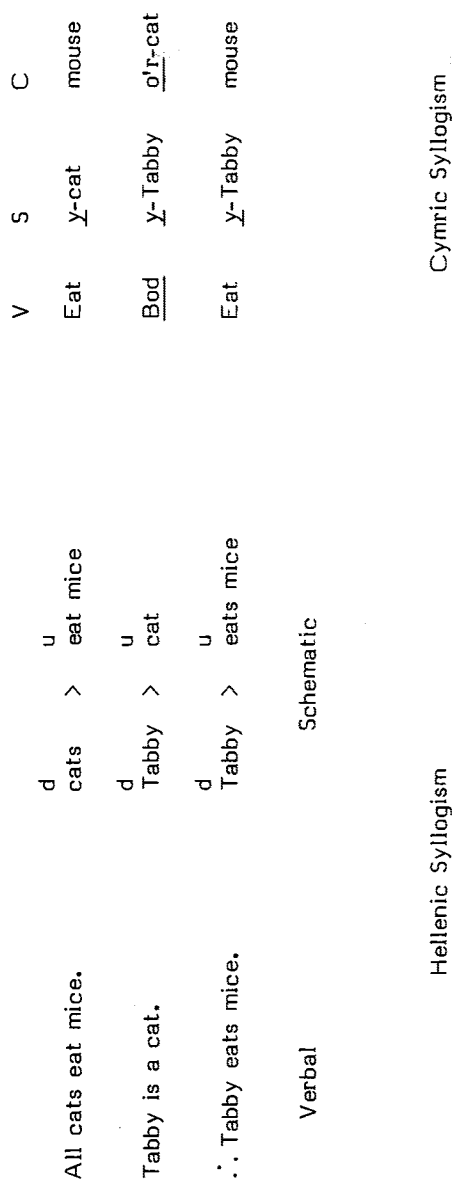


Figure 1

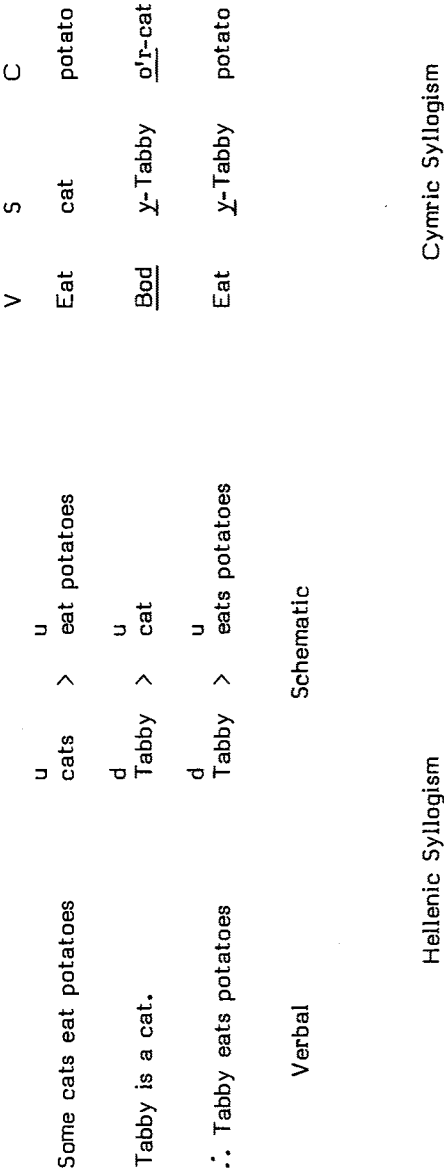


Figure 2

the distribution of such entities is established in neither premise (working together).

In the Welsh syllogism, the explanation is significantly different. There is no problem with the proposition that there is eating performed by some cat upon some potato. If the syllogism is invalid, the problem resides in the minor premise, in which it is stated that Tabby is indeed one of these cats, as shown through the use of the partitive definite *o'r*. On the other hand, as in natural language, this may be seen as reflecting the common practice of defining an item in a subsequent utterance in terms of the previous occurrence of the item, definite or indefinite. For example, we may say that A cat walked into the room, and then the cat hungrily devoured a potato. The use of the definite article in the second clause indicates that we are speaking about that particular cat in the first clause, in spite of the fact that the cat in the first clause is undefined.

The Cymric approach to the problem, then, is not that any syllogistic rules are broken at all, nor that the syllogism is necessarily fallacious. The problem is quite simply that the minor premise may be false, if we have not at the point of the minor premise established the definition of cat enough to use the partitive definite *o'r*. In order to maintain the validity of this syllogism, then, we must establish the definition of Tabby as referring to one of those cats that eat potatoes -- precisely as the minor premise would state. Once again, the syllogism in Cymric logic is not necessarily invalid, for the system maintains the flexibility to admit the natural-language interpretation in fact, if that is the case.

On the other hand, the Greek syllogism is necessarily invalid and cannot be saved by establishing a mere validity, for it cannot admit the natural-language interpretation, since as a result of the subject-predicate syntactic order of Greek, it is governed by distribution rather than by definition. It is false for structural, syllogistic reasons, for as noted above, the term shared by the two premises is undistributed in both propositions (sentences) in which it appears. The only way to save it is to make one of the middle terms distributed, and the only way to do this without introducing a falsehood is to respecify the term in both premises and to assert that All potato cats eat potatoes ($d > u$) and that Tabby is a potato cat ($d > u$). While it would justify the conclusion that Tabby eats potatoes ($d > u$), such an alteration would obviate the very need for a syllogism, in effect making it trivial.

For another example, let us examine the fallacy in figure 3. As seen in the schematic of the Hellenic syllogism, negation is accomplished in terms of the exclusion (the negative inclusion) of the first term (subject) from the second term (predicate). In the Cymric syllogism, however, negation is performed on the focal verb, as represented by the negative particle *ni* 'not' affixed to the verb term.

In Greek, the problem with this reasoning lies in the fact that a term distributed in the conclusion is undistributed in the premise in which it appears. The rationale behind the fallacy is thus that we do not know the distribution of entities that eat mice in the major premise relative to Fido in the conclusion. Thus, we cannot conclude the distribution of Fido relative to entities that eat mice, within the context of the major premise.

In stark contrast to the Greek, the problem in reasoning in the

Welsh lies primarily in the minor premise. In Cymric logic there is necessarily a rule that a premise of partitive definition cannot be negative in this type of syllogism (though it would be permitted in a conclusion); and the minor premise, while absolutely true, is thus ill-formed. The rationale behind this fallacy is rather broader than that in the Greek: Logically, we cannot define from a partitive standpoint what a term is by saying what it is not (again, in this type of syllogism). Just because Fido is not a cat, we cannot say that it does not partitively share a common attribute with a cat (such as eating mice).

Moreover, the Greek attitude toward this fallacy differs markedly from the Welsh attitude toward what is in nature the same fallacy, in that the Greek speaker/thinker sees basically a paragraph problem and the Welsh speaker/thinker sees basically a sentential one. That is, the Greek linguistic/logical attitude is that this fallacy lies in the interaction of sentences, regardless of the validity of each; and the Welsh linguistic/logical attitude is that this fallacy lies in the validity of an individual sentence, regardless of its interaction with other sentences.

Conclusions

While this barely addresses some differences and provides merely a passing glimpse into the system of Cymric logic developed on the basis of the Welsh syntactic structure, it should be enough to arrive at several conclusions. First of all, in any model of the semantic component or level of language, linguists must not be drawn into postulating a common pattern of reasoning. Just because things are true or false in the natural world does not mean that the interpretation of what makes things true or false is universal. As we see in the comparison of Hellenic and Cymric logics, the syntactic structure of the language determines to a large extent just how the semantic structure is composed.

Returning to the relationship between language and logic, if indeed the semantic structures of languages must differ in ways that to some extent reflect their syntactic structures, then there can be no such thing as a "universal logic," in the way that logicians (and linguists) have used Aristotelian categorical logic for centuries. Any reasoning is going to depend to one degree or another upon the linguistic patterns used in communication. Consequently, it is absurd to expect a Welsh student to gain insights into the reasoning process by stressing such alien concepts as subject-predicate propositions related by distribution of terms.

Finally, we ought to take another look at the Sapir-Whorf hypothesis. Perhaps a stronger version than that generally held by linguists (compare Lehmann 1976:266-68) may be called for. In any event, the comparison of Hellenic and Cymric linguistic and reasoning patterns should encourage linguists to look at all parts of language and culture from a more empirical, less predetermined viewpoint.

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STATUTORY ANALYSIS

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Introduction

In the writings of Jean-Marie Zemb, there are four dimensions along which a text should be analyzed. We will provisionally name these dimensions the semiotic, the rhetorical, the superficial, and the statutory. Studies of meanings of individual words and connections among items in the lexicon of a language are classified as semiotic. Work on the discourse flow of a text is classified as rhetorical. Analyses of surface case and word order systems are classified as superficial (but not in any negative way since surface cues are useful in analyzing along other dimensions). Investigations into the logical status and relations of sentence elements are classified as statutory. This paper will deal with the statutory dimension.

Zemb's current research emphasizes the statutory dimension, and he has published widely in Europe on this topic both in French and German, but Zemb's work is not well-known in the English-speaking linguistic world. It is hoped that this little paper will introduce Zemb to more American linguists and entice them to further explore his approach. After a brief sketch of Jean-Marie Zemb, the scholar, there will be an overview of the statutory dimension, followed by some diagnostic questions and their application to the analysis of a few sentences. Sentences are always analyzed in context. The reader will then be invited to attempt a statutory analysis of personally-selected text, which in turn would allow a test of Zemb's hypothesis that statutory structure is invariant under good paraphrase.

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Professor in the Collège de France

Jean-Marie Zemb was born on the 14th of July (Does that make him a revolutionary?) in 1928. He has been awarded doctorates both in France and in Germany. Until his recent election to the chair of German Grammar and Thought at the prestigious Collège de France, he was a professor at the University of Paris, campus III (new

Sorbonne) and then campus X (Nanterre). The Collège de France was founded in 1530 by the King of France to compete with the Sorbonne. Of the 52 chairs currently in the Collège, only a few are in literature and linguistics -- which places Zemb in an important position in the French linguistic world.

If the reader has difficulty assigning Zemb to a particular School of linguistics, it may be because he does not assign himself. In personal correspondence (18 July 1987), Zemb expresses his reluctance to pit School against School, his preference for vigorous discussion of precise problems, and his uncertainty about the usefulness of the concept "mainstream" in linguistics or other human sciences. In the same letter, he relates that he is increasingly impressed that in the area of natural language the "Ancients" already asked all the important questions and one would do well to further study why their answers are unsatisfactory.

A Glimpse of Statutory Analysis

Zemb's comments in the previous paragraph help explain why he has taken so much care to study and re-evaluate linguistic writings all the way back to Aristotle and Plato. Rather than working in a vacuum, Zemb has chosen the terms for the first level of statutory analysis ("rhema", "thema", and "phema") from historic threads. Ancient Greek grammar used the term "rhema" for a verb phrase not bound to existence. Plato used the term "onoma" for the name of a referent (and onoma was always a proper noun in the sense of allowing exact identification). Onoma has nearly always been translated as "subject". However, Zemb's "thema" is based on a re-evaluation and re-interpretation of onoma which proposes that "subject" is a mistranslation. Though the subject often belongs to the thema, the thema is not equivalent to grammatical subject. Plato and others have discussed various relational words for negation, possibility, necessity, etc., and Zemb has formalized these elements into his model and grouped them under "phema" (in honor of Peirce, who suggested the use of the term phema in a letter to Lady Welby).

For Zemb, each element of a sentence has one of three types of status: thema ("tay-ma"), phema ("fay-ma"), or rhema ("ray-ma"). [Suggested pronunciations are for clarity over a public address system.]

The reader may at this point be bothered by the distinction between thema and rhema as suggestive of a distinction between an object and an idea. Zemb does make a distinction but not necessarily the currently rejected distinction between "object" and "idea". For Zemb, thema and rhema are not necessarily different "things" but are truly different "functions". For example, "running" functions as an idea [rhema] in "He is running" and as an object [thema] in "Running is not good for the knees".

Zemb's basic proposal is that the thema, phema, rhema triad is at the heart of the structure of language. Human communication is based on the application of rhema to thema via phema. The thema claims some thing or things exist in the linguistic universe. The rhema makes some claim about the thema. The claim may be positive, negative, or wishy-washy, depending on the phema, which ties together the thema and rhema, forming a proposition. For some simple sentences, the thema can be roughly equated with the subject and the rhema with the predicate, but the equivalence does not hold very far.

If the Ancient Greeks understood the essence of the thema-phema-rhema triad, then how did this notion evolve into the traditional subject/predicate distinction? Zemb believes that the Stoics, who labored in this field from about 100 B.C. to about 300 A.D., thought they were building on the work of their predecessors but, in fact, misunderstood Plato and Aristotle and thus introduced a serious distortion. The distortion was to link the elements of the statutory triad (thema-phema-rhema) with the superficial grammatical functions (subject-copula-predicate). Later, problems caused by this linkage led to absorbing the copula into the predicate, resulting in the Port-Royal subject/predicate analysis of a sentence, which is central to traditional grammar. Many have detected problems in traditional grammar and have proposed solutions. Zemb's proposal is to return to the statutory trio as the basic analysis of a proposition, keeping surface grammatical categories such as direct object and preposition (or their equivalent in a system such as tagmemics), but discarding the subject/predicate terminology as misleading, since it implies a logical status for the predicate.

Zemb's approach calls the statutory and the superficial aspects of language "dimensions" to emphasize that they can vary independently. This can be illustrated through examples where one direct object is in the thema while another is in the rhema. Even the subject, which is usually in the thema, can belong to the rhema.

- (1) Halley's Comet has not been seen for 75 years.
- (2) Important events have been lacking in this little town for two generations.
- (3) The stork did not catch the frog.
- (4) This theory could make waves in some circles.

Even though the above four sentences are listed in isolation, they are presented as each belonging to its own coherent total context. Sentence (1) is from a discussion of astronomical timetables. Sentence (2) is not talking about any particular events. It says nothing has happened in that town. Sentence (3) is from a narrative of a day in the life of a stork. Sentence (4) is from a private conversation about the sociology of linguistics.

The subject "Halley's Comet" and the direct object "the frog" represent referents claimed to be in the real world and are thus in the thema. The subject "important events" and the object "waves" each participates in an expression which represents an "idea" (call it what you like) which is not existentially bound and is thus in the rhema. This may be more easily accepted by paraphrasing sentence (2) as "This little town has not seen any important events for two generations". "See events" and "make waves" are complex verbs (rhemas) and no existence is claimed for the events or the waves.

Note the full independence of status and superficial grammatical function as demonstrated by all four possible combinations (thematic subject, rhematic subject, thematic object, and rhematic object). Traditional grammar's false linkages of subject to thema and predicate to rhema collapse a whole dimension of analysis, which may be compared with collapsing a two-dimensional line drawing to one dimension and seriously hampering its power to represent anything but the simplest information.

Many linguists, including the author, have felt a yearning for another dimension or type of analysis to supplement traditional grammar. This has resulted in such enlightening types of analysis as deep cases, stata, and junctions. Statutory analysis should not be viewed as a threat to all of these, but rather as another enlightening type of analysis which can enrich and clarify other studies.

It is important to note that the identification of the composition of the thema, phema, and rhema is only the first level of statutory analysis. The second level is the assignment of internal structure to the thema and rhema, which is beyond the scope of this paper. In this area, Zemb has done considerable work on clause types, where statutory analysis suggests a revamping of traditional notions. Besides statutory analysis, which presupposes superficial analysis, there are semiotic and rhetorical analyses to be done, completing a four-dimensional analysis of language. Then there is the question of a computational approach to all these dimensions, which can be attempted prematurely but which should not be forgotten. How much of language can be computable depends both on whether there is a fundamental difference between a human mind and a Turing Machine and on which model is used as the basis for computation.

The Flavor of Statutory Analysis

If the reader is intrigued enough by statutory analysis to be still reading this far into the paper, there may be a need for some practical advice in applying the above rather esoteric and vague characterization of the thema, phema, and rhema. Therefore,

several diagnostics will be presented, particularly for assigning the direct object to the thema or rhema, since it goes about half one way and half the other.

Default phema: In English, the indicative does not normally involve a special form of the verb (except perhaps in the third person singular present indicative "s"). In English, the affirmative quality of a sentence is not normally expressed by a special word (except perhaps an emphatic "yes"). For both, we will say that they are unmarked (e.g. "I bought a new car"). Thus the default phema includes affirmative and indicative, while non-standard phemas are marked (e.g. negative, conditional, probable, emotive, etc).

Time test: The thema of a complete proposition always includes an indication of time, even if time extends indefinitely. If an element of the sentence is clearly a specification of time (e.g. yesterday, three years ago, tomorrow, soon, now, 19th of August 1986 A.D., etc) then that element is in the thema. An apparent exception would be "She lives in the past", where "in the past" is part of the rhema. It does not really specify the time, but tells in what kind of world she lives now. If it really spoke of time, then the verb would be in the past and she would be dead ("She lived in the 17th century").

Attribute test: If a direct object can be paraphrased to be a semantic component of an alternative verb, then that object is in the rhema. For example, "he lost blood --> he bled" and "he took some steps --> he walked". But a hospital assistant who misplaces a bottle of blood would say "he lost the blood" which cannot be paraphrased as "he bled" and a crazy thief who takes a stairway with him "took some steps" but this would not be paraphrased as "he walked".

Predicate noun test: If a direct object can be paraphrased to be a predicate noun, then that object is in the rhema. For example, "he drinks beer" --> "he is a beer-drinker" ("a beer-drinker" is in the rhema "be a beer-drinker"). Note that a beer-drinker can run out of beer and drink Sprite for days and still be an unhappy beer-drinker (being a beer-drinker does not imply that one has beer right now). On the other hand, we know that drinking a particular glass of beer does not necessarily make you into a beer-drinker (in "he drank my glass of beer", "my glass of beer" is in the thema). This sentence implies that there really is a glass of beer now.

Integration test: Start with an element of the thema. Take another element in question (is it in the thema?). Try to integrate the second element into the first. If it works, the second element is in the thema. For example, "The chiefs were elected among the Utes." "Chiefs" is in the thema. Is "among the Utes" in the rhema or the thema? We can paraphrase as follows:

"The Ute chiefs were elected.", in which "Ute" is integrated into "the chiefs". So "among the Utes" is in the thema.

Negation test: This test is often useful but applies directly only to affirmative sentences. To help in the discovery of what goes in the rhema and what goes in the thema, negate the sentence and examine what remains positive (i.e. is still claimed to exist) and what has become rejected (i.e. is denied). The positive is the thema and the rejected left-overs are the rhema. The act of rejection is in the phema. For example, start with "he cleaned the bathtub" and produce "he did not clean the bathtub". In the negation, "he" is still there and the "bathtub" is still there waiting to be cleaned. So they are in the thema. His act of cleaning that particular bathtub at that particular time is denied. So only "clean" is in the rhema. Now start with "he made a telephone call" and produce "he did not make a telephone call". In the negation, "he" is still there but there is no claim that a telephone call exists waiting for somewhere for someone to make it. So "he" is in the thema, and "a telephone call" is probably in the rhema. His act of making a telephone call at that particular time is indeed denied. So we conclude that "make a telephone call" is in the rhema.

From these two examples, it would appear that a direct object is in the thema when it has a definite article and in the rhema when it has an indefinite article. Unfortunately, life is not so simple. For example, in "he has the hiccups"/"he doesn't have the hiccups", "the hiccups" is in the rhema, unless you are telling a joke and ask "if he doesn't have them who does?". Now consider a shepherdess who wants to bring in her flock before the storm. In "She can't find a lamb and she's frantically looking for it", we understand that "a lamb" refers to one particular animal. In English, the article "a" is a pretty good signal of being in the rhema, but the article "the" and other articles are unreliable signals. In French and German, you have the same word for "a" and "one" (French "un" and German "ein") which multiplies statutory ambiguity. Often, one needs to use a combination of instruments.

Now we will examine a few more sentences and apply the diagnostics to them, shifting to a slightly more informal style.

1. On Tuesdays she eats a hamburger.

In this sentence we find a standard phema (affirmative and indicative). "On Tuesdays" is clearly a time marker and belongs in the thema. The time morpheme on "eats" is of course in the thema as well. We already suspect that "a hamburger" is in the rhema. To further separate out the thema and the rhema, we will apply the negation test: "On Tuesdays, she does not eat a hamburger". What remains positive? "She" still exists, but "eat a hamburger" is denied. This means that "eat a hamburger" is a candidate for

the rhema. The question then becomes whether "a hamburger" is in the rhema or the thema. In the negation, there does not necessarily exist any hamburger at all, especially on Tuesdays. She may eat fish and not even have raw ground beef in her fridge. This indicates that "a hamburger" is not in the thema but rather the rhema. In addition, you can apply the predicate noun test and paraphrase our sentence as "Each Tuesday, she is a hamburger-eater" even if the restaurant manager occasionally runs out of hamburger and offers a discount on fish for his faithful hamburger-eaters. Thus several test instruments have produced the same indication: "eats a hamburger" is in the rhema.

Rhema: eat a hamburger

Phema: affirmative; indicative

Thema: she; on Tuesdays; present (from eats)

2. She ate your hamburger.

Here the question is similar to the one in the previous sentence: is hamburger in the rhema or the thema? In the negative ("She did not eat your hamburger") "your hamburger" is claimed to exist (at least in the stomach of whoever ate it) just as clearly as no hamburger is claimed to exist in the previous sentence. Thus, in sentence 2, "your hamburger" is in the thema.

Rhema: eat

Phema: affirmative; indicative

Thema: she; your hamburger; past (from ate)

The computational linguist might justifiably ask "So what? -- Why should I care whether a noun phrase is in the thema or the rhema?" Zemb would answer that if elements of the sentence are properly given a status of rhema, phema, or thema (in addition to whatever other syntactic/semantic analysis is performed) then subsequent machine processing will be more straightforward because crucial rules will be able to use status to make decisions.

In general, Zemb claims that rhema/phema/thema status should be held invariant during good translation even if case varies. For example, if a target language has a verb for "eat a hamburger", say, "burgout", then sentence 1 could be paraphrased as "On Tuesdays, she burgouts", but sentence 2 should not be paraphrased because that would change the status of "your hamburger" from

thema to rhema. The status change would be inappropriate because the paraphrase would hide the fact that we are talking about a particular hamburger. Rather elegant, isn't it?

Another guideline based on status might be that a thematic object is a better candidate for passivization than a rhematic one. For example, "Mary ate your hamburger --> Your hamburger was eaten by Mary" is fine, but "On Tuesdays, a hamburger is eaten by Mary" sounds strange because it seems to imply that there is some weird hamburger that sits around and gets eaten once week. This is predicted by the "thematic" status of hamburger in the source of the first passive and the "rhematic" status of hamburger in the source of the second (unusual) passive. Very nice guideline.

3. She sold her house.

We will again apply the negation test: "She did not sell her house". What remains positive? "She" still exists, but "sell" is denied. It is true that "sell her house" is also denied, but "her house" is presented as still existing, so it is not part of the rhema. So what is actually denied is that (concerning her and her house) a sale took place, and both affirmative and negative versions imply that she used to own a home.

Rhema: sell

Phema: affirmative; indicative

Thema: she; her house; past

4. She sells houses.

Again the negative: "She does not sell houses". "She" is there as usual, but it is not exactly "sell" that is denied. She may sell shoes but not houses, and in the negative there is no claim that there are any houses, so "sell houses" is the rhema. And, by the way, she may or may not own her own home, and probably doesn't but needs money for a down payment.

Rhema: sell houses

Phema: affirmative; indicative

Thema: she; present

5. She ate the hamburger that I fixed for her.

Clearly, the object including its relative clause ("the hamburger that I fixed for her") is thematic.

6. The boy did not catch any fish.

It is not claimed that there are any fish. What is denied is "successful-fishing".

7. If I had 3,000 dollars, I would fly to Australia for my vacation.

The negation is "If I had 3,000 dollars, I would not fly to Australia for my vacation." The "if clause" is integrated (since its removal would change the meaning of the sentence) and so it is not a separate proposition and you can even convert it to "with 3,000 dollars". It is thematic because the same condition is valid in the affirmative and negative versions. Certainly, the 3,000 dollars are not currently available, but they are a "real" dream. The thema also includes the "I" of "I would fly" and "for my vacation" (since we can paraphrase as "I, as vacationer,..." in both affirmative and negative versions of the sentence. The vacation is a given, whether the 3,000 dollars is available or not, but to "fly to Australia" is denied and not just to fly so "fly to Australia" is in the rhema and is universal despite the presence of a proper noun. "To Australia" reduces the scope of "fly" but does not remove its universal (=not-bound-existence) quality. "Fly-to-Australia" is still rhematic as a whole (a reasonable predicate, just as "jump-in-the-lake" without a proper noun).

Rhema: fly to Australia

Phema: affirmative; conditional

Thema: I; for my vacation; if I had 3,000 dollars

8. It is raining.

Using the negative test, we discover that what is still claimed is the existence of some kind of weather ("it") in the present. There is no rain in the negative so "raining" is in the rhema. Zemb analyzes "is" as a verb, not just an auxiliary to "rain", and indeed as the nucleus of this rhema ("is raining").

Rhema: be raining

Phema: affirmative; indicative

Thema: present (from is); it

9. My pocketknife was found by the mailman.

In the active version, "the mailman" did (or in the negation did not) find "my pocketknife", and both are clearly thematic givens. Since the active and passive should have exactly the same statutory trio, both are also thematic in the passive.

Rhema: be found

Phema: affirmative; indicative

Thema: past (from "was"); my pocketknife; by the mailman

10. There is a spider in the garage.

The negative test gives us "there is not a spider in the garage". Clearly, the negative does not claim the existence of a spider, so "a spider" is in the rhema. "There" and "in the garage" are general markers which are still valid in the negative so they are in the thema. Note that this is an example of where the subject ("a spider") is in the rhema, while the subject is generally in the thema.

11. Buck lived at a big house in the sun-kissed Santa Clara Valley. (from The Call of the Wild by Jack London)

The negation is "Buck did not live at a big house in ... Valley." The negation does not deny that Buck is still around, so he is in the thema. The modifier(s) "at a big house in ... Valley" are part of the rhema "live <in a certain place>" because they do not integrate very well with Buck (as the story shows, Buck is not tied to the Santa Clara Valley), but they do integrate with the verb to reduce its scope.

Rhema: live at a big house in the sun-kissed Santa Clara Valley

Phema: affirmative; indicative

Thema: Buck; past

Conclusion

Zemb claims that given a good (careful) translation or a good (appropriate to the context) paraphrase, the superficial analysis

may change significantly but the statutory analysis will usually remain invariant. This invariance is one of the original external conditions of adequacy for a linguistic model proposed by Chomsky. The reader is invited to conduct a personal test of Zemb's hypothesis. Such a test is being done (by a graduate student as usual) at Brigham Young University. There is some room for a charge of circularity in that some of the diagnostics presented above involve paraphrase tests themselves. However, the basic criterion is function (tie to linguistic reality), not paraphrase. Besides, the existence of one paraphrase combining one element with another does not imply that all other paraphrases will follow the same pattern. If Zemb's hypothesis is true even most of the time it is a significant generalization. One consequence of Zemb's claim is that the traditional subject/predicate distinction should be discarded. A future paper will emphasize applications of statutory analysis to explain why some surface choices feel strange and tend toward different interpretations of texts.

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PHYSICALISM VS. FUNCTIONALISM
AND 'COGNITION' VS. 'INTERACTION':
A COMPARISON OF CHOMSKY'S AND HALLIDAY'S
THEORIES OF LANGUAGE

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A distinction is sometimes made between psychological and sociological approaches to language. I am going to explore two very different theories, one of which uses a psychological perspective and one of which uses a sociological perspective. These two types of approach may also be called, among other things, individual vs. collective, psycholinguistic vs. sociolinguistic, or cognitive vs. interactional. Halliday (esp. 1978) uses the terms 'intra-organism' and 'inter-organism' as well as 'cognition' and 'interaction'; the first of these pairs captures the distinction extremely well, but I will use 'cognition' and 'interaction' mainly because I find them easiest to keep apart, and also because 'interaction' is a vital aspect of Halliday's theory, which is one of the two I wish to investigate.

This paper seeks to contrast Noam Chomsky's theory of language, which takes a 'cognition' approach, with the theory of M.A.K. Halliday, which takes an 'interaction' approach, by showing what kind of scientific theory each one is an instance of. I aim to show that it is conceivable that the cognition/interaction distinction is not as important as it is sometimes considered to be. As far as Chomsky's and Halliday's respective conceptions of language are concerned, there is a much more fundamental difference which has little to do with one's decision to look at language in terms of the individual or in terms of a social group.

The more fundamental point of contrast between these two models of language probably lies in a difference in conception of the set of phenomena known as 'mind'. This will no doubt sound peculiar with regard to Halliday once I have outlined his theory, since Halliday has emphasized throughout his work that he is not as interested in psychological aspects of language -- i.e. aspects having to do with mind -- as in language seen as a social system that enables communication. Halliday often states that there is no

need, for general purposes, to study language in terms of what a speaker knows, i.e. in terms of mind. For example, he says (1978:39):

Language is a part of the social system, and there is no need to interpose a psychological level of interpretation. I am not saying this is not a relevant perspective, but it is not a necessary one for the exploration of language.

Chomsky on the other hand, as part of a discussion of the cognition-oriented idealizations necessary to his theory, gives an almost inverse formulation of Halliday's statement (Chomsky 1986:18):

By making these idealizations explicit and pursuing our inquiry in accordance with them, we do not in any way prejudice the study of language as a social product. On the contrary, it is difficult to imagine how such studies might fruitfully progress without taking into account the real properties of mind that enter into the acquisition of language...

Chomsky, unlike Halliday, writes quite overtly about mind. Indeed, mind is central to the way he views language: one of his well-known doctrines is that language is, and should be studied as, part of mind, and that, accordingly, linguistics is a branch of individual psychology. A vital part of this conception of linguistics is the notion of the "language faculty": an innate, uniquely human component of mind, which, as its name implies, is peculiar to language. Chomsky sometimes speaks of the language faculty as though it were a component of mind, and at other times as though it were a neurological mechanism. The mind/brain distinction is a crucial one, as it is possible to contrast Chomsky's theory of language with Halliday's in terms of how each of them conceives -- explicitly or implicitly -- the relation between mind and brain. I will later provide a framework used in philosophy of mind within which Chomsky's and Halliday's two contrasting conceptions of the mind-brain relation can be clearly situated.) The following quotation provides a fair summary of Chomsky's framework. Note that it leaves

open the question whether the language faculty or capacity is to be seen as 'mental' or as neurological organization:

The study of universal grammar...is a study of the nature of human intellectual capacities. It tries to formulate the necessary and sufficient conditions that a system must meet to qualify as a potential human language, conditions that are not accidentally true of the existing human languages, but that are rather rooted in the human "language capacity", and thus constitute the innate organization that determines what counts as linguistic experience and what knowledge of language arises on the basis of this experience. (Chomsky 1968:24)

It is not clear here whether the language capacity is to be seen as a component of a mind or of a brain. Whereas here "the necessary and sufficient conditions...constitute...innate organization", i.e. brain organization, elsewhere Chomsky (1986:24) states that these "principles...constitute one component of the human mind", i.e. mind organization. More generally, Chomsky often uses the expression "mind/brain" to refer to the locus of the language capacity. For example he writes: "The language faculty is a distinct system of the mind/brain..." (1986:25).

Chomsky aims to explain language within a framework in which mind and brain can comfortably be treated as interchangeable: for Chomsky, as for many others, mental organization is reducible to neural organization. This is certainly not a trivial claim, since Chomsky's entire theory of language rests on it, and since there are serious alternative conceptions of the mind-brain relation.

Chomsky seems to believe that linguists can describe languages and, from observations about particular languages, aim toward conclusions about what it is that makes language language. Universal grammar is a characterization of what is common to all human languages. What it is that causes all languages to display certain similarities is "the genetically determined language faculty" (Chomsky 1986:3). In

other words, what enables people to acquire, know and use language is human biology. Chomsky begins with the assumption that "...knowledge of language is acquired on the basis of degenerate and restricted data..." (Chomsky 1968:53), and then sets out to look for an explanation of how people manage to acquire, know and use language when the data they encounter are so poor. Chomsky implies that while linguists can describe specific languages and even draw conclusions about language in general, all their claims will be descriptive. Only researchers in other fields, particularly neuroscientists, will one day be able to explain language in the sense that only a sufficiently matured neuroscience will be able to provide specifications of the language faculty's physiological organization -- which is the organization that will ultimately explain why language is what it is.

Halliday's overall conception of language contrasts sharply with Chomsky's. For Chomsky, it is the physical organization of the language faculty that characterizes language, i.e. which establishes "the necessary and sufficient conditions that a system must meet to qualify as a potential human language". For Halliday, it is functional organization. Language is seen in Halliday's systemic-functional theory as a medium in which humans interact in order to survive. Following Hjelmslev's system/process dichotomy, language can be seen both as code (or system) and as behaviour (or process). Halliday characterizes the language code as meaning potential, the actualization of which constitutes linguistic behaviour.

Halliday claims that language can be explained when one conceives of it from both the system and the process perspectives. The language system (a particular language) is a complex set of interrelated networks of options in behaviour. It is a functionally organized code. This means that a language code is shaped by its use: the communicative consequences of activations of, say, the English code reflect back on the code itself. Languages change over time because their uses change.

Halliday's views on the relationship of linguistics to other disciplines are naturally different from Chomsky's, since this is an issue that is closely tied to one's concept of language. Halliday (1978:36) states that no discipline is completely autonomous, yet that it is possible to explain language, the object of linguistics, as a system with properties of its own, in its own terms.

Linguistics does not need a field such as neuroscience to provide the ultimate explanation of why language is as it is. Chomsky's claim was that a theory is needed to account for the fact that people acquire, know and use language despite the poverty of the linguistic data they are exposed to. They receive finite input -- a limited number of sentences -- and yet in principle are able to generate infinite output. A highly specific type of biological mechanism must be responsible, Chomsky claims, and it is up to neuroscientists to specify the components of the mechanism. It is such a physical specification that will explain language. Systemic-functional linguistics has no need for such a tight dependence on neuroscience because it views language as functional and thus as self-explanatory.

Their respective conceptions of the relationship between linguistic and 'purely physical' phenomena are what make Halliday's and Chomsky's theories so different from one another. The same type of relationship is investigated overtly in the field known as philosophy of mind or philosophy of psychology. For an introduction to the subject see Churchland (1984), Block (1980c). The problem in philosophy of mind is formulated as a quest for a definition of mental phenomena. Chomsky's theory, which discusses mind overtly, is easy to situate in one type of model I will outline. Halliday's theory avoids reference to mental phenomena, but it appears nonetheless to be compatible with another type of model, which I will discuss later.

The most basic issue in philosophy of mind is the mind-body problem. Philosophers of mind seek to answer the questions: What is a mind? What are mental states and processes? Do the phenomena we call mental constitute a subset of physical phenomena or are they in some way independent of the physical world? Answers to questions such as these can never be as simple as either 'Mental phenomena are nonphysical' or 'Mental phenomena are physical'. Any theory of mind must define what it understands by 'mental' and by 'physical' and what relationship it posits between them.

The first choice one must make (which I am simplifying somewhat) is one between a doctrine that recognizes both physical and nonphysical substances -- a theory known as dualism, and another that recognizes only physical substance -- a theory known as materialism. Materialism is subdivided using

different boundaries and labels by different authors, but I will work with the assumption that there are three main kinds of approach to mind within the materialist framework, which I will call behaviourism, physicalism, and functionalism.

Behaviourism in philosophy and in psychology is the doctrine that what an organism does and might do can be accounted for in terms of what is observable: one can theorize about its behaviour without attributing mental representations to the organism. Physicalism, on the other hand, maintains that it is acceptable and advantageous to postulate mental states. Within behaviourism, dispositional states can be the only kind of state referred to. Even if they are called 'mental states', it is publicly observable behaviour that defines each of them. For example, pain might be defined as the disposition to wince and groan under given circumstances. According to physicalists, however, a particular type of mental state such as pain is identical to a particular type of physical state, i.e. some configuration of neurophysiological patterns. Mental state types and physical state types are considered to be numerically identical, meaning that they are taken to be one and the same. Some physicalists believe that our commonsense conception of mind (folk psychology) is largely accurate and that the mental terms we use in everyday language, such as 'think', 'remember', 'want', 'believe', 'hope', 'fear', will be linkable to various neurophysiological mechanisms once these mechanisms and their relations to the mental concepts are discovered. Others believe that folk psychology is radically misleading, and that it must be thoroughly reformulated in order to have any descriptive power (Churchland 1984:43). A matured neuroscience, on this view, will eliminate folk psychology (ibid.). To whatever extent one accepts or rejects folk psychology (which present-day theories of psychology are generally based on), physicalism involves reduction from one theory to another. Within physicalism, which includes Chomsky's theory of language, what is seen as the ultimate object of inquiry is the brain.

Chomsky's use of the expression 'mind/brain' in itself does not imply any specific view on the mind-brain relation, other than the assumption that mind is realized by brain, i.e. a materialist stance. But it is clear from his general hypotheses about language that he has a physicalist view of mind. The main thrust of Chomsky's theory is that language is a

component of mind, and mind reduces to brain. A reductionist (because physicalist) conception of mind is necessarily embedded in Chomsky's theory of language because it is a prerequisite to it. Though reductionism of this sort is entailed by what I am calling physicalism, it is not entailed by the logically prior choice of materialism.

Functionalism, an alternative theory to both physicalism and behaviourism, characterizes the mind as an information processing system (Haugeland 1978). Like behaviourism, it treats mental states as the causal link between environmental input and behavioural output. Unlike behaviourism, however, functionalism claims that it is explanatorily inadequate to conceive of them as mere dispositions to respond to given stimuli under given conditions. Functionalists (see Haugeland 1978 and Block 1980c) claim that what characterizes a particular type of mental state, such as pain, is its functional role. This concept of functional role encompasses both 'causal role' and 'role in the system'. A functionalist who recognizes pain as a distinct mental state, for example, will claim that pain is partially definable in terms of its status as a causal link between sensory input and behavioural output, but that an explanation of pain requires a specification of its role in the overall system of mind, i.e. of its relationships to other functional components. Just as they see specific types of mental state as characterizable in terms of their functional role, functionalists see the mind as an intricate network of functional components and the relationships among them. Such a conception of mind is what Haugeland means to capture with the term 'information processing system'.

Halliday's theory of language is functionalist in the same sense that functionalist theories of mind are: it treats its object as explicable in its own terms, i.e. in terms of its own functional components and their interrelations. There is no appeal, within these models, to physical explanations, since from a functionalist point of view any physical description that might be relatable to the functionally defined phenomena would not even constitute an explanation of these phenomena (Dennett 1978). A functionalist conception of mind generally implies the view that neuroscience will one day enable the specification of the physical organization that realizes mental organization. This means that neuroscience will not explain mind itself, but rather it can potentially

explain how it is that mind is realized in the brain.

Throughout his career, Halliday has investigated language from an 'interaction' perspective: he has defined language as a central part of the social semiotic -- as an abstract behaviour potential. Halliday's (1975) book Learning How to Mean models the language system of a child, Nigel, at various ages, and explains his progression from one phase (characterized by a particular system network) to another. Each description of Nigel's code at the various points in time constitutes a description of those functional components of the social semiotic that Nigel has internalized. The descriptions are made within a social theory about interaction, yet at the same time what is described are functional components of a speaker's mind, i.e. it is simultaneously a theory about cognition.

As I have just tried to show, and as Chomsky and Halliday both state, there is no need to oppose a 'cognition' perspective to an 'interaction' perspective. Before closing I would like to further illustrate, with the following passage, the plausibility of the notion that Halliday's theory in particular is compatible with a functionalist 'cognition' approach to language (Halliday 1978:51):

It is certainly true that for a speaker and a hearer to interact linguistically they must have...knowledge [of the functions of language]; but we only know that they have this knowledge because we see them interact. If therefore it is possible to describe the interaction...as the actualization of a system of potentials, then it becomes unnecessary to introduce another level, that of knowledge.

One of the idealizations necessary to Chomsky's 'cognition' theory is that the linguist's descriptions of a language such as English are descriptions of what an ideal native speaker knows. The corresponding idealization in Halliday's 'interaction' theory is that what the linguist is describing is an abstract behaviour potential. However, no major conceptual jump is involved when a functional theory treats the abstract potential as realizable in the brains of individuals. What I would like to suggest is that

while the choice of an individual vs. a collective, or a 'cognition' vs. an 'interaction' stance may have some influence on a model, this is only one factor. Furthermore, it is questionable whether it is even a mandatory choice: Fawcett (eg. 1980, 1984) and Gregory (eg. in press) overtly seek to explain language in terms that encompass interaction and cognition. It may be that functionalism as a distinct kind of scientific explanation (see Haugeland 1978, Abrahamson 1978) enables one to benefit from both of these perspectives at once.

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III

PHONOLOGY

FOR A PHONOLOGY WITHOUT "RULES":
PERIPHERAL TIMING-STRUCTURES
AND ALLOPHONIC PATTERNS IN FRENCH AND ENGLISH*

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In this summary paper, I will illustrate the principle that constraints in speech production create stable acoustic patterns which can insure the distinctiveness of feature-related events. In these terms, it is suggested that properties inherent to the speech apparatus structure language units in their basic aspects and that the contextual allophones or language-specific variants of these units derive from adjustments in the parameters of peripheral organizations relating to syllables. I will thus present proposals which complement certain motor-control theories (especially Kelso, Saltzman and Tuller, 1986a), despite several points of disagreement (Boucher, 1987). However, recognizing that phonetics has been an almost marginal domain in language study, it may be useful to preface my illustrations by pointing out some of the issues involved, particularly in terms of some current models which, I believe, have developed from misconceptions about basic units and which underestimate the organizational capacity of speech.

1. ON SPEECH AS A PASSIVE EXECUTOR OF ABSTRACT
UNITS AND STRUCTURES

In characterizing phonetics as a marginalized field in linguistics I am referring to a conception of language which, over the years, has restricted the study of speech to a kind of descriptivism. As portrayed in a number of textbooks, the main objective of phonetics is to define the physical correlates of linguistically derived categories.¹ By most accounts, language, in itself, is organized at abstract levels, whereas the speech apparatus is more or less a passive executor of planned units and structures. Thus, much as Saussure has expressed it, *La langue* is separate from *parole* in that it constitutes a "système libre, organisable à volonté, dépendant uniquement d'un principe rationnel" (1978:112), that is language depends exclusively on mental or cognitive principles. In this view, the question of the vocal apparatus is indeed secondary (ibid., p. 26): language, associated with *forme*, is distinct from *substance* of speech (op.cit., p. 26). And we find roughly the same two-

dichotomies in structuralist linguistics as in generative theories where competence is associated with mentally innate, "deep" structures, while performance largely reflects actualization (e.g. Chomsky, 1967, 1972, 1980a, 1980b; also Katz, 1964).

The first point I want to emphasize is that, contrary to the above view, there is evidence that speech is not a mere executor of abstract forms. In fact, various reports reveal that peripheral systems can actively structure sequences of motions (cf. Weimer, 1977; Turvey, 1977; see also Fowler, Rubin, Remez and Turvey, 1980). A striking demonstration of this principle in speech comes from Abbs and Eilenberg (1976). In their experiment, using a buccal prosthesis called a bite-block to impede the motions of the jaw, the authors found that irregular interruptions during the pronunciation of intervocalic [p] were accompanied by almost immediate compensations of the lips (see also Abbs, 1986). Here, subjects could predict neither the precise moment nor the force of resistance in the block. Yet labial adjustments were too quick to suppose some retroactive process involving higher level decisions or reference to some preestablished plan. In the authors' words: "it is possible that some of the movements and muscle activity patterns that have been implicated as evidence of higher level control in abstract models... may represent system activity utilization of mechanical properties" (1976:152).

It may also be noted that, in unimpeded speech, dynamic constraints have been inferred from invariant timing relationships between consonant and vowel motions (e.g. Kelso and Tuller, 1985; Tuller, Kelso and Harris, 1982; Munhall, 1985). According to Wyke (1974), it appears that time-dependent fluctuations in intraoral pressure during consonant occlusions triggers a reflex adjustment in the aperture motions of the vocal folds which corresponds to the acoustic onsets of vowels. As I will illustrate shortly, such coordinative constraints generate stable timing ratios in acoustic signals which can define some of the invariant patterns that preserve the distinctiveness of linguistic features. But from this perspective, it appears that the constants which allow distinctions derive from the structural properties of speech. To use Saussure's terms, "form" is inherent to "substance", or at least one should recognize that abstract units and structures may not be independent from constraints in speech activity (see also, Kelso and Tuller, 1985; Kelso et al, 1986a).

2. ON THE VALIDITY OF "PURELY" ABSTRACT UNITS AND STRUCTURES IN LANGUAGE ANALYSIS

I am not disputing here the usefulness of dichotomies such as Saussure's as initial assumptions. However, in the course of developing formal theories on the basis of a speech/language dichotomy it appears that units and structures which were once held to have phonetic counterparts are now often taken to be strictly formal or mental. That is, it should be remembered that for Praguian phonologists, postulates of features, phoneme-bundles, syllables, etc. and systems of opposition based on commutation were frequently said to be phonetically verifiable (cf. *Projet...*, 1931). Thus, feature nomenclature such as oral, stop, voiced, palatal etc. implied phonetic events. And these events were seen as being bundled into actual commutable segments. Take, for example, Hjelmslev's so-called "experimental commutation test" (1937:156) whereby sound segments could presumably be excised from recordings and inserted in other environments for verifying feature bundles. Actually, this technique was later used to question the existence of bundles in speech continua (e.g. Harris, 1953; Schatz, 1954). Moreover, it became apparent in the early fifties that there was no one-to-one correspondence between postulated linguistic units and invariant patterns in speech. But this had little effect on linguistic theories. As Cooper saw it, in terms of the phonetic research of this period, "most linguists, especially of the American School, found little that seemed relevant to their concerns with theory and formal structures" (1983:279). This imbalance between linguistic postulates and phonetic observations had two important consequences.

First of all, lacking experimental support for postulated units, the concept of "features" came to be interpreted as "abstract classificatory markers" (Chomsky and Halle, 1968:65) whose phonetic names are often seen as nothing but labels (cf. Fischer-Jørgensen, 1975:212ff and references to Lamb, Fudge and Hjelmslev; for a more recent defense of this view, see Anderson, 1981). There was a similar reinterpretation of the assumed segmentation of features, phonemes, syllables, words, etc. Their existence in speech is now frequently taken to be "abstracted from percepts" rather than directly sensed (e.g. Hammarberg, 1982:130). That is, in a number of cases, these units have come to represent "independent constructs"² of an almost purely

psychological nature (for further discussion, see especially Bromberger and Halle, 1986; Fowler, 1983; Parker and Walsh, 1985).

A second consequence of the previously mentioned imbalance was that formal models incorporated notions such as phonemes almost as if these units were self-evident or irrefragable. Consider, for instance, Chomsky and Halle's phonology (1968) which takes as its starting point existing phonemic descriptions. However, it should be remembered that the postulate of bundles or matrices rests on some quite arbitrary choices. Classical phoneticians who had seen the necessity of positing functional distinctions to avoid the absurdity of describing infinite variations of speech sounds faced the problem of a formal representation of these distinctions. At the time, several systems of notation were proposed which might have avoided the bundle notion altogether (cf. Abercrombie, 1982:111-132). But given their concerns for teaching language pronunciation in Europe, founders such as Passy, Sweet and Jones adopted romanian orthography (The principles..., 1949:1-2). There followed a theoretical leap in terms of segmentation: in attempting to represent distinctions by alphabetic symbols it was implicitly assumed that feature-related events co-occur in self-contained packages -- what Prague phonologists saw as units which could not be broken down into smaller units ("...unité phonologique non-susceptible d'être dissociée en unités phonologiques plus petites" -- Projet..., 1931:311). Again, observations of highly overlapping patterns in speech offered no support for the postulate of features occurring in phoneme-size blocks of time. But rather than reassessing basic assumptions, various models were proposed which attempted to "fit" phonetic patterns to the postulate of phoneme segments by means of "rules" which are also said to be "a part of the abstract, nonmechanical cognitive structure that represents our competence in the language" (Anderson, 1981:508).

On both the above points, I argue that models based on uniquely psychological units and grammars may not fully account for the organizational aspects of speech activity.

3. FOR A SPEECH-BASED PHONOLOGY

Firstly, the claim that invariant linguistic categories are abstracted from percepts rather than directly sensed derives essentially from the lack of any clear one-to-one correspondence between acoustic data

and postulates of invariant feature distinctions. I submit that speech researchers have been unable to find feature-related constants largely because they have relied on postulates such as "phoneme" in segmenting speech (cf. Cooper, 1983:279). This is changing, and some researchers are now rejecting conventional segmentations as a priori (Kelso et al, 1986b; 1983). Indeed, it should be recognized that functional distinctiveness does not provide any grounds for segmenting speech into alphabetic-like blocks of time. As one author puts it, segmentation is irrelevant to distinctiveness and relates to how speech is produced and perceived (Fowler, 1980:119; also Fowler et al, 1980). What, then, are these units of speech which relate to invariant patterns?

Let us take the example of category distinctions in oral stops which have been shown to correlate with changes in the timing of several acoustic elements (e.g. Abramson and Lisker, 1970; Lisker, 1978). Whatever these elements are, it seems unlikely that distinctive identifications can be based on absolute measures of time. For instance, we cannot say that [t] is different from [k] on the basis that the first has a closure which lasts approximately 70 ms while the second has a closure of about 60 ms. Obviously, if listeners were to perceive distinctions on this basis, then considering that changes in speech tempo or phonetic contexts can alter milli-second values, there would be frequent confusions in the identification of phonological categories. Still, we can presume that some invariant timing patterns occur which keep perceived categories separate and distinctive. Furthermore, there are indications that listeners can be referring to the overall rate of an utterance or to syllable-size cycles in perceiving relative timing constants (Summerfield, 1975; Huggins, 1971). Thus, Miller and Liberman (1979), for example, report that speakers can perceive information contained in release spectra by some near-constant timing relation within a syllable.

Figure 1 illustrates some of these relative-timing patterns. It shows non-word sequences with [tal in contexts involving different speech rates (A and B) and phonetic environments of voice (C), place (D) and mode of articulation (E). We see that in the first two waveforms, for instance, changes in speech rate can affect the absolute durations of [t] substantially; thus in A we find 50 ms closure gaps while in B the gaps are about 70 ms. On the other hand, there is an appreciable degree of constancy in the timing of the closure

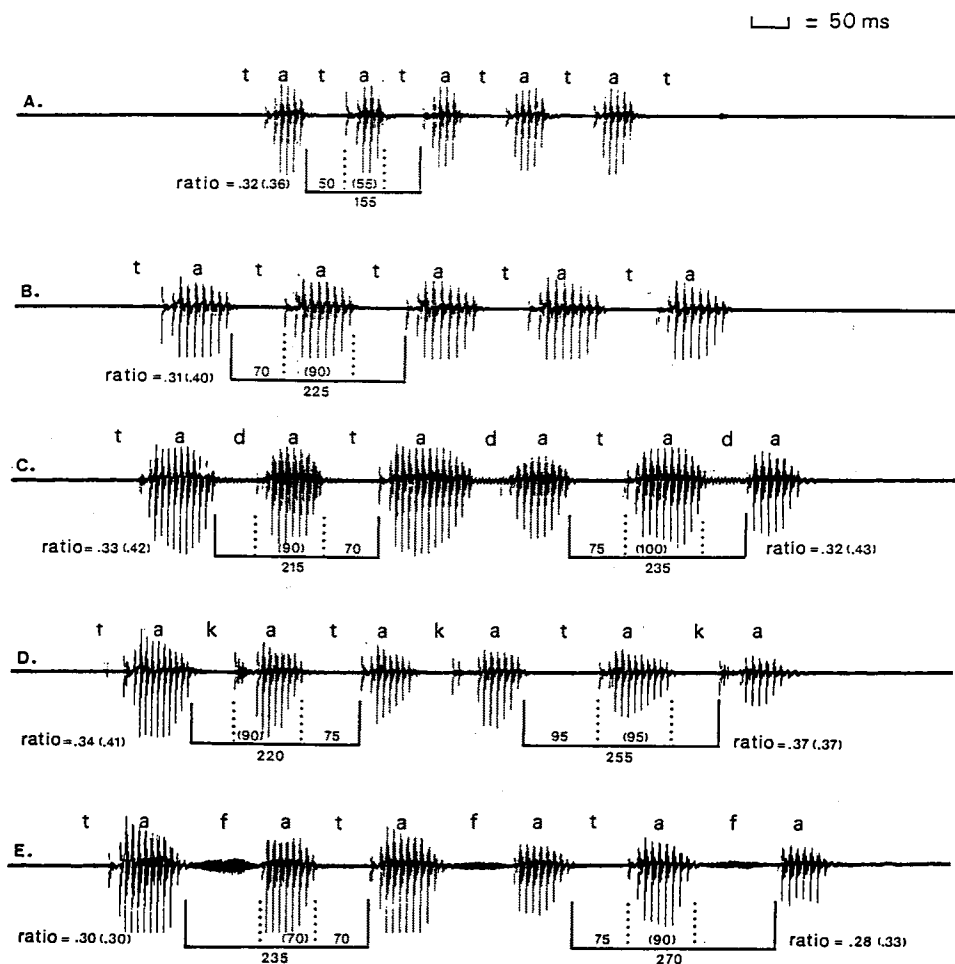


Figure 1. Acoustic signal of a single subject pronouncing [ta] in contexts involving changes in speech rate (A, B), stop voicing (C), place (D) and mode of articulation (E). Notice that the ratios of acoustic components (dotted lines) within the consonant-to-consonant cycle (solid lines) show some stability across changes which involve substantial variations in the absolute durations of phonetic elements.

relative to the consonant-to-consonant frame (solid lines). Moreover, for the individual utterances, the duration of the release + vowel component (dotted lines) defines near-isochronic proportions within the consonant-to-consonant frame across phonetic changes. Similar effects exist for meaningful tokens -- where vowels are not reduced in unstressed position (Boucher, 1987). But note that if we were to segment these sequences as canonical-like CV syllables (i.e. at the onset of the closure gap) or into phoneme-size units where the release burst is assigned to a consonant instead of a vowel there would be far less constancy in the ratios (for details, see Boucher, 1987). In other words, some non-conventional segmentation may provide a "better fit" with the invariant patterns which relate to category distinctions.

I would emphasize that the consonant-to-consonant segmentation proposed here is also consistent with perceptual data. In this regard, it has been shown that the perceived margins of syllable-size cycles in speech do not correlate with the acoustic onsets of consonants or vowels as phonological transcriptions imply (e.g. /V-CV/, /VC-V/). Instead, they correlate primarily with the durational aspects of consonant closure gaps (Marcus, 1981; Cooper, Whalen and Fowler, 1986). Indeed, in perceiving syllable-size cycles, listeners may attend to consonant-to-consonant intervals which define stable patterns in acoustic elements relating to feature distinctions.

Faced with this prospect, though, one is led to recognize a fundamental problem in current models. As noted, segmentations inspired by notions of phoneme-size bundles and canonical forms may be incommensurate with the quasi-invariant patterns which may explain both the distinctiveness and the basic organizations of phonological elements. By this lack of isomorphism between postulated segments and the near-constant relations representing structural constraints there is some question as to the adequacy of conventional units in uncovering the organizational aspects of distinctive events in speech (cf. also Kelso et al, 1986b).

We could express similar doubts with regard to the postulate of "phonological rules". In fact, one can wonder if the still unverified hypothesis of phoneme-by-phoneme adjustments (cf. Schane, 1979) does not, by definition, violate certain cognitive restrictions. Consider the following rules in English, intervocalic or initial /p/ is aspirated before a stressed vowel.

For instance --

$$/p/ \longrightarrow [p^h] / \{ \# \} \text{ — } \overset{V}{[+stress]}$$

Formulated in this way, the rule implies that phonemes can be adjusted individually. That is, between the plan containing the abstract /p/ and the time at which it is uttered, a speaker unconsciously refers to upper level rules representing cognitive structures and corrects an essentially "lower level" aspiration, before proceeding to the next unit which may involve a return to upper level rules, and so forth. On the other hand, phoneme-size units can last as little as 30 ms (e.g. Lehiste, 1970:13) and it has been shown that the time it takes to initiate a correction in a motoric sequence is of the order of 120-200 ms, that is, approximately the average duration of a syllable (cf. Schmidt, 1982:201 and Lehiste, 1970). Thus, phoneme-by-phoneme adjustments by the successive application of higher-level rules seem unlikely.

In contrast to this view, the aforementioned evidence bearing on dynamic constraints suggests that peripheral mechanisms can self-structure features for syllable-size frames. According to this principle, pressure variations during the production of consonants trigger adjustments in the activity of vocal folds and this defines syllable-size organizational frames containing two sets of parameters. The first set would correspond to feature-related events which can be inserted in the order prescribed by the frame with minimal effects on its internal timing. The second set would refer to the properties of the syllable framework itself; these variables can be adjusted within certain limits but only through some training, usually in the context of acquiring the phonetic habits of a particular language.

As an example of the first type of parameter, Figure 1 shows that different features corresponding to articulatory and phonatory events can be produced within syllable-like frames but apparently conform to stable timing relations representing the above constraint principle. In other words, speakers can control the direction and "speed" of movements; however these variables are constrained into particular temporal configurations which can relate to syllable cycles. But it is the second type of parameter, those which relate to the constraint structure itself, which can explicate the language-specific allophones such as aspirated stops.

To illustrate this in general terms, we noted that there is much evidence attesting to the presence of stable phasing relationships between consonant and vowel cycles of activity. However, there are also clear indications that such cycles can have language-specific phasing angles (on this notion, see Kelso and Tuller, 1985). For instance, in French, the onsets of vowel-related motions tend to occur earlier in the consonant than in English (Perkell, 1986; Boucher, 1985). Some of the consequences of this difference in phasing are illustrated by the hypothetical waveforms of Figure 2. This figure represents the aperture motions for intervocalic stops and their possible effects at the level of acoustic signals. The cycles in dotted lines represent vowel-related changes in glottal aperture while the solid lines represent the consonant-related changes in aperture occurring during the movement of a vocal tract articulator. Both cycles can be sinusoidal-like in shape for these sequences, as observed by Kelso et al (1986a).

We see that for English, aspiration between points 1 and 2 on the acoustic signal relates to the phasing of consonant (C) and vowel motions (V). Thus when the vocal folds begin to close for V (point 1) the articulatory displacement for the stop C has not completely occluded the vocal tract and, consequently, there is a release of subglottal pressure contributing to "aspiration". In French, though, the vocal folds begin to close prior to the consonant opening, impeding the release of subglottal pressure. The result is a comparatively smaller amount of aspiration than in English, as shown in acoustic analyses (cf. Watson, 1983).

The same principle could conceivably explain the tendency of anticipatory nasalisation in English (compare Fr. canne ['kan], gramme ['gram] and Eng. ['kæ̃n], ['græ̃m]) and the occurrence of long vowels with unsteady formants (e.g. Fr. mai ['me], beau ['bo], Eng. [me¹], [bo⁴] -- see Delattre, 1965:107; 1966:104 for high-speed films illustrating the glide-like aspects of English vowels compared to French). That is, such cases may reflect what Delattre (1965:67) has called consonant anticipation in English. As our illustration suggests, consonant onset in English (point 3) can occur when the glottis may still be closed and vibrating. Thus the anticipated consonant can have substantial effects on the vowel portion of the signal. A different tendency exists in French where an opening of the

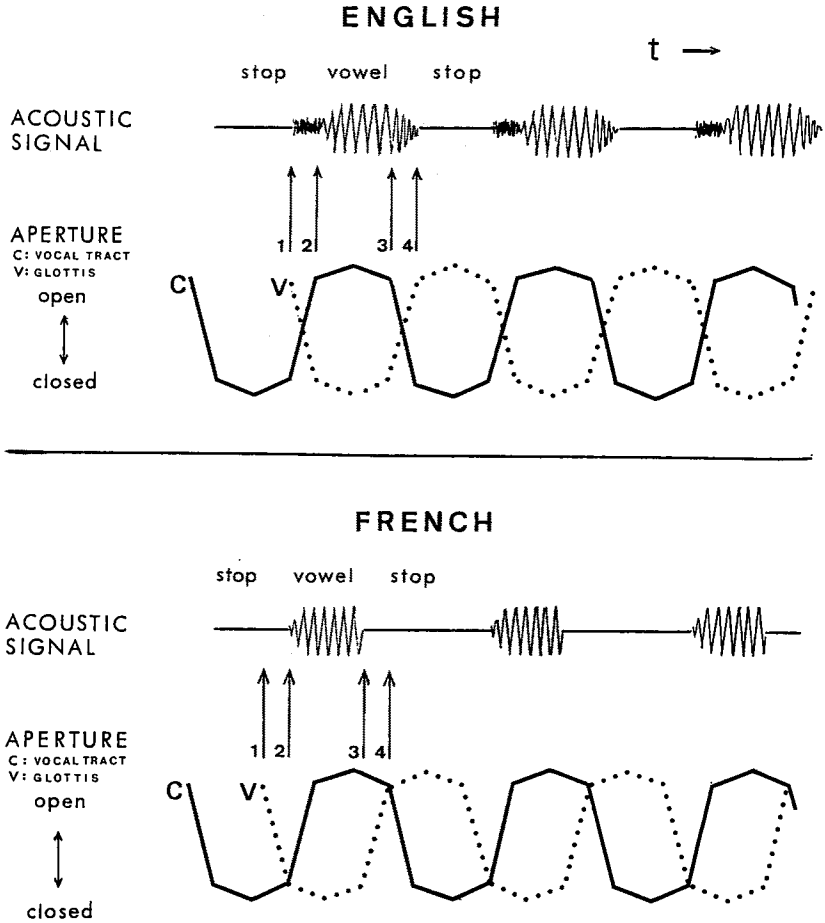


Figure 2. Articulatory-to-acoustic cycles for intervocalic stops --- hypothetical waveforms (cf. Kelso et al, 1986a): below the acoustic signal are the aperture motions of a vocal tract articulator (for the consonant, C) and of the vocal folds (for the vowel, V). Note that a difference in the phasing of C and V cycles in French and English can correspond to different allophonic patterns in acoustic waveforms.

glottis (point 3) can occur prior to the onset of the consonant (4) resulting in steadier and shorter vowel formants. Of course, these illustrations do not deal with a number of specifics and parameters such as "tension" (or stiffness, cf. Kelso et al, 1983) and syllabification (Boucher, 1987). Nonetheless, they are consistent with the data indicating the presence of different "phonetic modes" for French and English.

It is important to note that, with the preceding hypothesis, postulating phoneme-by-phoneme adjustments is unnecessary. So-called allophonic patterns, such as aspiration, may derive from dynamic structures (which appear to operate as mass spring systems -- for details, see Fowler et al, 1980; Browman and Goldstein, 1985). Moreover, such a speech-based proposal offers a notable advantage over more formal assumptions of rules in that it rests on a principle which can provide a unified explanation not only for particular allophonic patterns but also for the existence of distinctiveness and basic syllable organizations. In fact, stages in language development show that specific changes in the dynamic properties of speech allow the emergence of syllable-size timing structures that inherently stabilize the events which can function as distinctive elements.

For instance, according to our principle, the constants which can preserve a distinctiveness in phonetic events are the product of a particular coordinative constraint in the timing of consonant and vowel cycles. Thus, under a relatively steady force of air, glottal or supraglottal stops are limited in their duration by the accumulation of pressure. This restriction combined with the triggering effect pressure has on vocal-fold motions creates rhythmical spurts and stable timing ratios. On the other hand, one could argue that units such as fricatives, because they do not close off the vocal tract, are not temporally restricted by a build-up of pressure (therefore, our principle would not justify the presence of steady rhythmical patterns in speech). But what is striking is that units which can be transcribed as stops occur earlier in the child's speech than laterals and most fricatives (Bernthal and Bankson, 1981:82-83; Oller, 1980; Locke, 1983:7; Oller, Wieman, Doyle and Ross, 1976). Furthermore, it is widely recognized that a canonical babbling stage (7-10 months) characterized by the reduplication of syllable-size cycles (e.g. /ba-ba-ba/, /ta-ta-ta/) precedes a sudden increase in the variety of sounds where occlusives predominate (cf. Oller, 1980).

In accordance with our principle, then, the child produces manoeuvres most appropriate to a self-organization of steady syllable rhythms.

It should also be noted that, according to this premise of self-organization, syllable patterning is not merely the product of socially transmitted knowledge. There are specific morphological changes which govern the appearance of such patterns and which remain outside of a sociolinguistic explanation. Notably, at some point before the canonical babbling stage (approximately 6 months) changes in the configuration of the vocal tract have occurred whereby the child, till then a habitual nose breather, begins to manifest signs of oral respiration (cf. Laitman, 1983). This apparently justifies the increasing variety of oral speech sounds and the emergence of reduplicative syllable cycles. Additionally, the fact that manoeuvres are predominantly occlusive at this stage can be related to limitations in the control of musculature. As such, occlusives are easier to execute than units such as fricatives or laterals. For instance, stops such as [t] require a unilateral movement of a group of muscles whereas a fricative such as [s] requires a fine control of two sets of muscles to simultaneously elevate the tongue's laminae and depress the dorsum's median.

In short, dynamic properties restrict random fluctuations in the timing of articulators and self-organize syllable cycles which can constitute the child's first "words" (cf. Ferguson, 1986). Moreover, prior to the development of adult-like elements some parameters of the intrinsic timing structure undergo adjustments that conform to the allophonic patterns of a particular language. Here, though, the adjustments may not proceed in terms of "local" modifications of phoneme-size events -- as a rule-based formulation would imply -- but in terms of global rhythmic and intonational patterns (Boyssons-Bardies, Sagart and Durand, 1984).

CONCLUSION

In summary, the previous considerations suggest that we should not underestimate the explanatory power of speech constraints by thinking that the sole interest of linguistics lies in "independent constructs" or in the abstract formulas which can generate surface structures. As some motor-control researchers point out, linguists, much as computer scientists, can propose a multitude of models each capable of generating a desired output but none of which could describe human language, and this

for an obvious reason: human language is not constrained artificially by formal criteria -- it is constrained naturally (cf. Kelso et al, 1983; Fowler et al, 1980). Thus rather than using criteria such as formal simplicity or abstract distinctiveness in postulating units and structures, we might renew some fundamental balance between observation and theory. And achieving this balance may require some reappraisal of the role of speech in language structuration. In this way, alternative models can be constructed which can more fully exploit the constraints underlying the human capacity for language.

FOOTNOTES

- 1 For instance, Schane (1973:8) sees that "The only reasonable goal for a universal phonetics is... a description of just those sounds which can be linguistically significant in some human language".
- 2 This term is taken from Bell and Hooper (1978:4). It is used here in reference to a mentalist conception of language units and denotes "phonological elements that are metaphysically distinct from phonetic ones..." (Bromberger and Halle, 1986:514).

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AUDITORY JUDGEMENT OF INTONATION PATTERNS

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This paper describes an experiment in classifying intonation patterns. The results will be compared with similar experiments in identifying speech melody and also segmental phonemes. The differences will be discussed and I shall try to give explanations. First of all let me try to give the reasons why I have chosen a particular model for the description of English intonation. Previous attempts to describe the intonation patterns of the English language have mainly followed two paths: The first approach utilised a succession of 4 pitch levels of differing heights. This was the model which Pike used in his *The Intonation of American English*. Trager and Smith (1957) later added the three terminal junctures to this model and continued using the four pitch levels. The other approach taken was that of the British School of Linguistics, whose first proponent was Kingdon with his kinetic tones such as falls, rises and combinations thereof, as well as the static level tones such as high and low level. Kingdon's analysis later led to the tone - tune analysis of O'Connor and Arnold with an inventory of six nuclear tones and ten tone groups. Halliday and Crystal were using a quite similar model within the British School. The American and the British approaches both had, I believe, two features in common -- either the very large inventory of units of the British School or a small inventory of units with an almost unlimited number of combinations of those units in the American approach. The other common feature was that both Schools made a distinction between pitch and stress in intonation analysis.

I think both features are of some disadvantage when analysing intonation. A large inventory is difficult to handle in intonation studies simply because of the large number of choices necessary every time one wants to describe a particular intonation. The small inventory, on the other hand, does not give a sufficiently precise account of language specific clusters. The distinction between pitch and stress (or accent) in intonation is confusing because both terms refer to the same auditory phenomena. A stressed syllable is always associated with a considerable change in pitch. This can be shown by acoustic analysis where stressed syllables always have a strong variation of the fundamental frequency, either falling or rising (Koberne 1982). Bolinger pointed this out in 1958 in his "Theory of Pitch Accent". I agree here with Pilch that stress and pitch are not two different entities but just different kinds of description. Both of us, however, therefore limited the notion stress to word-

level description. In Intonation we would call it a potential place for a pitch pattern.

I shall now give a very short description of the model which I am using -- which I owe to Pilch. The basic units of this model are four discrete pitch patterns. First: the Convex Mid Fall which is mainly found when we quote a single lexical item like:

[pitch] [listening]

Second: The Convex Low Fall as in

[I want to [go]]

on the last word. Third: The Concave Fall in exclamations like

[go! go!] or [wait!]

Fourth: The Concave Rise as found in Yes - No questions:

[Did you arrive [yesterday]]

These pitch patterns are not limited to our examples but are characteristically found in these expressions. The pitch patterns are not precise descriptions of the audible pitch movement, but rather mnemonic devices for remembering the global shape of the auditory impression. The pitch patterns also vary according to position and context. These four patterns are elements in a hierarchic order; this means they occur in certain places in the intonation contour.

The length of the intonation contour is usually signalled by pauses. Between two pauses the position with the widest pitch movement or the most prominent part of the utterance is the nucleus and carries the nuclear pitch pattern. The other prominent parts of the contour are the pre-contour pitch patterns preceding the nucleus, and the post-contour pitch patterns following the nucleus. Outside the nucleus, the pitch patterns have narrower intervals. The non-prominent parts of the contour are the pro- or enclitic materials. It remains unmarked and is usually spoken on a low, level pitch. The pitch patterns either occur in their pure form as made manifest in the examples above, or they are modified. Four modifications can be distinguished: 1. Extra Height where the pitch pattern starts higher than usual or rises higher. 2. Fadeaway usually at the end of an utterance when the voice becomes low and sometimes creaky. 3. Extra-length is a general lengthening of a pitch pattern. 4. The anticipated nucleus when the pitch movement starts earlier than usual and is high, and the nucleus then, after a break, starts low. An example is

[I'm so [glad]]

Applying the model to spoken texts is sometimes rather difficult. But we need a model onto which we can map our language data. The difficulty lies mainly in deciding which is the

appropriate pitch pattern when we listen to our language material. The problem at this point is whether our model can adequately describe our data, or whether the listener sometimes fails to make a proper decision. As for the first of the alternatives, I think it is inherently difficult to test this model since we cannot compare it to any other model. We can only look for descriptive adequacy but we cannot say precisely how adequate it is. The second alternative is much easier to test. We need only ask a certain number of subjects how much they agree in evaluating a certain text according to our model.

Therefore we carried out the following experiment: for one term a group of 15 students was taught to apply the model. The instruction was given by Pilch, the author of the model. At the end of the instruction the students were asked to transcribe an unknown text. The places for the pitch patterns were given and they had to decide whether they heard pitch pattern 1, 2, 3, or 4. The individual scores for the identification of the pitch patterns ranked from 29% to 62%. The mean value for all students was 43%. Compared to a completely random result which would yield 25% correct responses (since they had 4 choices), our results are well above random. With a mean value of 43% they are almost twice as high as a completely random score, but they are still very far away from a complete congruence of 100%. But is it by any means realistic to expect 100%? Let us look into other experiments in the evaluation of pitch.

The German phonetician Eberhard Zwirner (Zwirner and Zwirner 1937) and his co-worker W. Bethge (1952) carried out such experiments in 1937 and 1952. The results show that 3 trained listeners who had to decide whether the speech melody was rising or falling could only agree in 41% of all cases. In those cases where two of the three agreed, they had a convergence of 63%. Individual results ranged from 46% to 76% in the cases of falling melody and from 77% to 80% in the cases of rising melody. Although the experiments of Bethge and Zwirner did not probe exactly the same task as we did, it can be shown that auditory judgement of speech melody seems to yield overall results only in the range of 40% to 60%. A rising melody is easier to judge than a falling one, and individual scores can be quite deviant from the mean value.

Before interpreting the results, we want to compare the judgements in suprasegmental phonology with those in segmental phonology, i.e., to the correct identification of a given vowel or consonant. A study by Peterson and Barney (1952) on vowels shows that in some cases correct identification was only 88% instead of the expected 100%. But we know from other studies that on all three levels of the communication process we find variation, i.e., in production, in perception, as well as in the soundwave. Therefore it is not surprising that the identification of vowels and consonants can be well below 100%. Still, there is a considerable difference between the identification of phonemes and the identification of intonation patterns. The main reason is,

we think, that variation in intonation is far greater than in vowels and consonants. But there is no doubt that there are certain typical and recurrent intonation patterns for each language and probably each dialect. But the segmental phonemes have a different function: they are distinctive entities, whereas intonation patterns are only discrete. Segmental phonemes distinguish meanings, but intonation patterns are only very rarely used for that purpose. Therefore even a very disturbed utterance with intentional gaps and mistakes can be correctly identified as far as its meaning is concerned. The context always assures that communication is maintained. Intonation patterns can be used much more freely and if they fluctuate they cannot be traced back to a certain meaning or to a correct pattern, because there is no such thing as editorial hearing in intonation. Intonation is used to establish focus in a text; it also establishes the coherence or the non-coherence of texts. Its contribution to meaning is very limited. Although, as I pointed out above, the experiments of Zwirner and Bethge did not exactly test the same process as we did, they show that the auditory judgement of intonation phenomena is usually in the range of 40-60%. Apart from individual differences there also seems to be a learning effect according to Bethge's results, but this is only in the range of 10-20%. It also appears that certain patterns are perceived more easily than others. Long patterns are recognized more easily than short ones. Patterns with wide frequency change can be perceived better than those which have a narrow frequency range. Rising patterns provide better results than do falling ones. This last observation is supported by a perceptual study by Morton and Jassem (1965). According to this study, a rising frequency of a certain value is more easily identified by listeners than is a falling one.

Let me come to a conclusion. From a communicative point of view, it is not necessary to identify each phoneme correctly. Even a 12% error margin does not impede communication. Since intonation has a much lower value in communicating a message, an identification result of 40-60% is all we can achieve. There is no evidence that this has an adverse effect on communication whatsoever. But I think it has a certain relevance to how complete the description of intonation should or can be. I would not want to abandon the pitch pattern approach in intonation. But I would opt for a less complete description in intonation analysis. Not every prominent part of the text should be interpreted in terms of a particular pitch pattern. It would be sufficient just to mark prominence as such, without specifying a certain pitch movement.

I think that in the past years the importance of intonation as a language-specific system, which I still believe it is, has been overevaluated. A number of the phenomena which we come across in intonation analysis are speaker-dependent and not language-specific and should therefore not become part of the linguistic description.

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A LINGUISTIC PERSPECTIVE OF FUNCTIONAL ILLITERACY

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A request by way of introduction

In order to enhance your appreciation of this paper, I would like to ask you to consider -- without checking any sources -- (1) How many English graphemes the upper high back vowel /u/ has; and (2) what the average number of graphemes is for each English phoneme.

Please take a moment to write down both estimates for future reference. Thank you. I would now like to ask you to read a short, highly selective curriculum vitae which may serve to illustrate the differences in ease of reading acquisition, depending on the systems of orthography to which the learner has been subjected.

I was born and raised in Hungary. Like most of my compatriots during the 1920's, I did not have any familiarity with the letters of the alphabet prior to entering first grade. I, as well as every other Hungarian child without serious learning disabilities, learned to read any and all Hungarian texts fluently by the end of the first year of elementary school. In another three years, my fourth grade classmates and I acquired mastery of Hungarian orthography.

I learned to read Latin correctly at the age of ten within one week and German at eleven in less than a week. So did all the other Hungarian students studying in the gymnasium (pre-academic high school) that I attended. At the age of fourteen, I started learning to read and write English, and in the next four years I made some modest measure of progress. At the university, I dropped English and majored in German and Finno-Ugric Hungarian linguistics, philology and literature. As part of my training, I learned to read and write Finnish in a few hours as did all my fellow students.

In 1949, I immigrated to the United States. Due to poor English proficiency, my first jobs were outside the academic world. Mingling with the common folk, I learned English well enough in two years to return to my field of foreign language teaching. As soon as I had arrived in the United States, I resumed learning to read and write English and I have been making moderate but steady progress throughout the almost four decades that have elapsed since then. At this rate of progress, I hope to become comfortable with English orthography in another decade or so...

A brief summary of the root cause of functional illiteracy

Who wouldn't know the story which begins like this, "For want of a nail, the shoe was lost, for want of a shoe the horse was lost?"--With a new twist, it could end, "For want of a systematic English orthography, countless students have been and continue to be lost to functional illiteracy." To linguists it is obvious that the term, "English spelling system" is a generous euphemism. In fact, our non-system seems to be the most ruinous influence on the forward movement of American education and on the daily routine of schoolrooms throughout the English-speaking world.

Of course, it is human to create excuses for what we are used to. No wonder that there are quite a few who, in lieu of a solution, try to refute this truism. There are even some who rudely brand critics as iconoclasts and pooh-pooh any questions raised about our long-exhumed gruesome orthographical mummies. Such detractors confuse language with spelling. In a pseudoscientific manner, they disregard the irrefutable truth that language is the magnificent result of millenia of subconscious cognitive evolution, while orthography is produced -- you might say artificially created or concocted -- by the conscious mind and may be great or not so great. While language cannot and need not be improved at all, orthography can and should. Our language is a precious jewel full of beauty but its spelling is needlessly confused.

It is no secret that learning our spelling non-system consists of a great deal of rote memorization. Trying to master the greatly arbitrary grapheme sequences of what seems to be myriads of words and a multitude of rules, exceptions from the rules, and exceptions from the exceptions, appears to too many students to be an endless and valueless nuisance. The much-too-frequently fruitless struggle of learners with relatively high IQ's bruises their sensitive egos and dulls their youthful enthusiasm and buoyancy. Few are fortuitous enough to be spared frustration or humiliation. No wonder their teachers do not find them exuberantly oohing and aahing whenever yet another grapheme of a phoneme is introduced. No wonder groups of our youth do not queue up at libraries, but are too often glued to the tube. It does not take a supersleuth to conclude why Hugh, Lew, and Louis, Sue, Prue and Eunice much prefer to watch beautiful movies and Dallas or Matt Houston on what they call the boob tube* over mastering spelling intricacies.

My nephew, Lou Hughes, for one, cannot see why four different letters should be wasted on the same single vowel sound in "through," "Sioux" and "coups." (To make matters worse, the

* With apologies to Marshall McLuhan

plural of the last word consists of the same two phonemes - /ku/ - as the singular "coup.") Learning Siouan would probably be easier for children, whose innate aptitude for language acquisition has not been muted yet, than to maneuver (spelled also: manoeuvre) in innumerable abstract labyrinths of English orthography. Even clipping coupons for the family's purchases of bouillon cubes, Neufchâtel and Port Salut at reduced prices might seem less tedious than daily spelling exercises which must constitute a large part of reading lessons. Learning karate and jiujitsu looks less futile and more immediately useful...

Tom Wilson hit the crucial point with a cartoonist's exquisite humor: - A tiny pupil (who is apparently accused of having screwed things up) is being interviewed by a stern-looking principal. Keeping his cool, he refuses to accept the blame, "Maybe I'm not an under-achiever...Maybe you're an over-expecter," he argues.

A mother of four confided to me that the losing struggles of her first three children moved her to tears when her dewy-eyed fourth one started school. She felt like a ewe, bleating disconsolately when her last lamb was led way. By then she knew how doomed the enthusiastic hopes of the little one to learn to read soon might prove to be. "In the first two grades they usually get just a few spoonfuls," she explained. "The speech of these six-year-olds is truly beautiful," she continued. "Can its written representation be so far removed that it takes years and years to learn it?" she mused ruefully.

I salute the thousands of committed and resourceful reading teachers who are imbued with a truly indomitable spirit and their persevering students who are dedicated to the diligent pursuit of learning to read. Both accomplish superhuman tasks against tremendous odds.

But others just do not have what it takes to achieve this wonder, and they gradually lose their grip on reading. Falling behind in reading dooms too many victims to a gloomy cognitive vacuum and excludes them from realizing their full human potential. It deprives so many of a bright future and causes them to miss their rendezvous with destiny, entombed within the confines of functional illiteracy. Truancy is a frequent initial form of refuge. Dropping out may be the next. Other forms include drug abuse, the usual route to juvenile delinquency.

You can imagine how many functional illiterates could have been saved through the years, had our spelling non-system been reduced to a simplified system decades ago. Some late bloomers may belatedly become aware of this and might someday sue the educational establishment for their lost opportunities. It would be both ludicrous and tragic if it took lawsuits to jolt us into the realization that neither the teachers, nor the schools should

be faulted as much as our orthography, which is incomparably more intricate than that of any other language.

Only the long-overdue debut of a new and truly systematic orthography can successfully eliminate the dour necessity of teaching remedial reading by committed volunteers at libraries, YWCA's and other community centers: tutoring interminably...

Human ingenuity put into methodological improvements can do much. (No linguist would dispute that huge credit is due to Rudolf Flesch for having helped in persuading most of the teaching profession of the conduciveness of the phonics method of teaching!) Technological advances can help smooth the way, milieus more conducive to learning can usefully contribute to successful teaching. But even astute pedagogical measures are no match for the chaotic phoneme/grapheme relations of our orthography. They constitute an external remedy, and only an internal reform of the orthography's phoneme-grapheme ratio can amount to an effective rescue effort. Left as is, English orthography will keep looming as an interminably time-consuming, revenue-squandering and energy-wasting, yet totally unnecessary bottomless sinkhole. It is avoidable, since it is not immutable. Our orthography can be fundamentally systematized and streamlined. It can be made lucid and easily learned by all, (except those with severe learning disabilities). Not only can the gloom and doom of functional illiteracy be removed once and for all, but the entire learning process can be substantially eased, brightened and speeded up.

The issue is as serious as the 50 graphemes of the upper high back vowel /u/ illustrate; this is the number which has been used in this brief synopsis of the root cause of functional illiteracy. No wonder that the denouement of even the best phonics reform movement of the last three decades is that Johnny still can't read... It appears to be the duty of linguists who specialize in this area not to remain neutral but to represent duly the linguistic perspective.

Analysis of the 50 graphemes representing the phoneme /u/
in the synopsis above

[Twelve groups of graphemes listed from the simplest representation of /u/ to the most complex; graphemes within each of the 12 groups listed alphabetically*; words containing each grapheme listed in the sequence of their occurrence in the synopsis]

* They are listed alphabetically but with the following refinement: First - those which begin with the letter(s) on which they are based, and secondly come those which contain that particular letter or those letters as the second or third element.

(1) 2 full and independent letters

1. o who, to, do, movies, losing, entombed, into
2. u students, ruinous, influence, solution, truism,
truth, evolution, enthusiasm, exuberantly,
supersleuth, innumerable, jiu-jitsu, crucial,
enthusiastic, truly, superhuman, fortuitous,
truancy, tutoring, juvenile, opportunities,
ludicrous, ingenuity, Rudolf, conductiveness,
conductive, consuming, lucid, duty, duly

(2) 2 full letters under the influence of a subsequent "silent e"

3. o...e movement, improved, whose, moved, prove, removed,
lose, improvements
4. u...e rudely, produced, multitude, rules, introduced,
tube, conclude, aptitude, reduced, constitute,
salute, excludes, include

(3) The second half of each of two letters and the last third of one letter

5.  students /styudnts/, human, excuses, irrefutable,
enthusiasm, fortuitous, humiliation, muted,
innumerable, futile, humor, pupil, refuses,
enthusiastic, usually, superhuman, future, usual,
opportunities, community, tutoring, ingenuity,
conductiveness, conductive, immutable, duty, duly
6.  YWCA's /way dabel yu si e/
7.  IQ's /ay kyuz/

(4) The second half of one letter under the influence of a subsequent "silent e"

8. ...e used /yuzd/, refute, confuse, huge, produced,
confused, multitude, introduced, tube, aptitude,
reduced, constitute, useful, accused, mused, salute,
refuge, abuse, dispute, usefully, contribute, astute

(5) 2 digraphs and 2 trigraphs, based on the letter, "o"

9. oe shoe
10. oo schoolrooms, too, boob, cartoonist, cool, school,
soon, spoonfuls, dooms, gloomy, bloomers, smooth,
looming, gloom, doom, root

11. ooh pooh-pooh, oohing
 12. who who /u/, whose /uz/

(6) 6 digraphs and one trigraph, based on the letter "u"

13. ue true, gruesome, glued, Sue, Prue, sue, due, overdue,
 revenue, issue
 14. uh McLuhan
 15. ui nuisance, fruitless, bruises, pursuit, lawsuit
 16. ut Port Salut
 17. eu pseudoscientific, supersleuth, maneuver, Neufchâtel,
 milieu, neutral
 18. iu jiujitsu
 19. ieu lieu

(7) One digraph, based on the letter "u," under the influence of a subsequent "silent e" and the second half of the same digraph

20. hu...e exhumed /igzumd/
 21. ~~hu~~..e exhumed /igzyumd, huge /yuʃ/

(8) The second half of each of 6 digraphs, 3 trigraphs and one quadrigraph, based on the letter "u"

22. ~~ue~~ continue /kəntinyu/, valueless, argues, continued,
 imbued, overdue, due, rescue, revenue
 23. ~~ui~~ nuisance /nyusns/
 24. ~~ut~~ debut /debyu/
 25. ~~uu~~ vacuum /vækyum/
 26. ~~eu~~ euphemism /yufəميزəm/, Eunice, maneuver, Neufchâtel,
 neutral
 27. ~~hu~~ human /yumən/, humiliation, humor, superhuman
 28. ~~ugh~~ Hugh /hyu/
 29. ~~eau~~ beauty /byuti/, beautiful
 30. ~~eue~~ queue /kyu/
 31. ~~hugh~~ Hughes /yuz/

(9) 2 digraphs, 6 trigraphs and 3 quadrigraphs, based on a combination of the letters "o" and "u"

- 32. ou routine, you, youthful, groups, youth, Louis,
coupons, route
- 33. uo buoyancy /buyənsi/
- 34. oue denouement
- 35. oui bouillon /bulyan/
- 36. oup coup
- 37. ous rendezvous
- 38. oeu manoeuvre
- 39. iou Siouan
- 40. ough throughout, through
- 41. oups coups (de grace)
- 42. ioux Sioux

(10) The second half of each of one digraph and 2 trigraphs, based on a combination of the letters "o" and "u"

- 43. ou Houston /hyustən/, coupons /kyupanz/
- 44. hou Houston /yustən/
- 45. oeu manoeuvre /mānyuvər/

(11) Two digraphs and one trigraph, based on the letter "u"

- 46. wo two
- 47. ew new /nu/, Lew, screwed, interviewed, dewy, knew
- 48. ewe jewel /ʃul/

(12) The second half of each of a digraph and a trigraph, based on the letter "u"

- 49. ew new /nyu/, few, nephew, dewy, knew
- 50. ewe ewe /yu/

Selection criteria for the corpus of words containing /u/

Since this analysis has identified substantially more graphemes of the phoneme /u/ than any available publication, a thorough description of the methods used and a summary of the results follows. Webster's Ninth New Collegiate Dictionary (Merriam-Webster, 1984) has been the basis of most of the analysis

of phoneme-grapheme correspondences. Two exceptions are the second pronunciation variant of "fortuitous" (in grapheme category 5) and the proper name "Hugh" (in grapheme category 28). These have been taken from The Random House College Dictionary (1975). Of all the vocabulary items containing the phoneme /u/ featured in the synopsis above, the first pronunciation variants have been utilized (the first variants of either of the two possibilities provided by the parenthetical technique used by Merriam-Webster). Its explanation states, (p. 12):

Symbols enclosed by parentheses represent elements that are present in the pronunciation of some speakers but are absent from the pronunciation of other speakers, elements that are present in some but absent from other utterances of the same speaker, or elements whose presence or absence is uncertain:

happen...vi...happening /haep(ə)niŋ/
satisfactory /sætəsfaɪkt(ə)ri/
response /rispən(t)s/

Such parenthesizing occurs in this synopsis repeatedly with reference to /u/ versus /yu/ variants in such words as /st(y)udnt/, or /k(y)upn/. Grapheme categories represented by only second pronunciation variants are: 12. who /u/, whose /uz/, 25. vacuum /vækjuəm/, 31. Hughes /yuz/, 33. buoyancy /buyənsi/ and 48. jewel /juəl/.

In light of the fact that linguists in general do not subscribe to normative-prescriptive linguistics, this distinction might be considered superfluous. Yet the surprisingly large number (50) of graphemes of /u/ presented here may induce some critics to question the validity of the inclusion of who (for /u/) and whose (for /uz/) because few native speakers are aware of its widespread use, and of buoyancy, since its most commonly used variant is /bɔyənsi/ rather than /buyənsi/. The same is probably true about the /juəl/ variant of jewel in place of the more common /juəl/.

Another quote from Merriam-Webster is very decidedly in favor of not dismissing second (or even third or fourth) variants, (p.12):

The presence of variant pronunciations indicates that not all educated speakers pronounce words the same way. A second-place variant is not to be regarded as less acceptable than the pronunciation that is given first. It may, in fact, be used by as many educated speakers as the first variant, but the requirements of the printed page are such that one must precede the other:

apricot /æprəkat, eprəkat/
foreign /fɔrən, farən/

The learner is constantly exposed to the speaking community's ambiguity of countless such variants as /vækyuəm - vækyum/; /hyuz - yuz/; /bɔyənsi - buyənsi/; juəl - jul/ (for jewel); /hu - u, huz - uz/ (who, whose), yet he/she must learn only one spelling for any number of pronunciation variants. Therefore, such ambiguities must be taken into account in this study. While such second variants have been included, they have been assigned a special category in the statistical tally and are duly noted in the conclusions drawn at the end of this work.

Inclusion of the English names of the letters of the alphabet for the purpose of phonemic analysis in the list of phoneme-grapheme correspondences is novel in this work. The self-evident justification is that their names are included in the dictionaries mentioned above and in the list of references, and it seems obvious to include them in any alphabetic spelling system's phonemic-orthographic analysis. Even beyond this formal justification lies the recognition that there is an overwhelmingly important reason for doing so in English. The names of the letters and their sequential enunciation constitute the first step and the very foundation of the teaching of reading and writing and it remains the mainstay of any and all orthographical references later on. (This is in direct contrast to most - if not all - other alphabetic orthographies as will be explained later.)

In an evaluative analysis of any orthography, the general frequency count of the occurrence of each grapheme representing each phoneme should be considered as a variable. Accordingly, the following graphemes listed among the 50 used in the foregoing synopsis have been classified as not generally used because they occur only in words of low frequency in American usage: 14. uh in McLuhan, 16. ut in Port Salut, 18. iu in jiu-jitsu, 34. oue in denouement, 38. oeu in manoeuvre, 39. iou in Siouan and 45. seu in the /mənɪvər/ variant of manoeuvre. As could be expected, the borderline between "common" and "not generally used" words - and, consequently, graphemes contained in them - is blurred. Most educated people are familiar with "denouement," with McLuhan's name, and with Port Salut cheese, to mention only three, but the concern in this work is with functional illiteracy. Consequently, these graphemes are kept in a specific category of their own in the statistical summary and are duly noted in the conclusions. The name of the cheese Neufchâtel has not been mentioned in this context as a non-common word because its /u/ grapheme, the digraph eu, is represented by five other words which are all commonly used. (Even if only one word were a frequently occurring one, that would make any grapheme it contains eligible for the "common" category by the standards of this study.)

Statistical techniques

One of the novel features of this presentation are the twelve main categories into which the 50 different graphemes have been organized. It seems that chaotic as the immense number of graphemes is, they can be grouped in such a manner. However, neither this grouping nor any of the individual graphemic categories are suggested as the only possible categorizations. They are the end result of long research using trial and error and are offered to facilitate an overview.

This in-depth phoneme-grapheme analysis does not operate with the notion of "silent letters" in any context other than when such letters influence the phoneme-symbolizing role of a preceding letter. That is to say, in analyzing the English orthography, it seems justifiable to say that the letter u represents the phoneme /u/ in rude under the influence of the subsequent "silent" letter e. But it would definitely frustrate any comparative-evaluative analysis to suggest that in the quadrigraph ough (in: through) the letters o, g, and h are "silent" and "u" is not. The concept "silent letter" might be found pedagogically useful even beyond the one function mentioned above, but it seems to serve no reasonable purpose in this type of phonemic-orthographic analysis.

Another innovative feature of this study is the vertical division of digraphs, trigraphs and quadrigraphs which represent two phonemes each, such as in value /vaelyu/. Sequential segmentation is simple when two phonemes are symbolized by a single letter as in the word "futile" /fyutl/. But who could suggest that in "rescue" the letter u be assigned the phoneme value /y/ and the letter e be identified with the phoneme /u/?... Would it sound reasonable to say that the letter u in debut represents /y/ and the letter t symbolizes /u/? It would be even more difficult to segment the letter sequence ugh into /yu/ in Hugh in any other form but in this fashion: hugh, the upper half (referred to as the "first" half in the statistical chart) representing the semivowel glide phoneme /y/, and the lower half (referred to as the "second" half) signifying the phoneme /u/. It is mainly for these reasons that a decision was made to vertically halve biphonemic graphemes (graphemes representing two phonemes).

An additional remark must be made concerning the sequential segmentation of the names of letters. It is easy to segment a B /bi/ in this fashion, B, doing justice to its consonantal segment as well as the co-sounding vowel section. In the segmentation of the letter W, however, it is somewhat puzzling whether the entirety of the letter should be halved for /y/ and for /u/ or merely its second half, since the name "double" /yu/ seems to suggest that two phoneme pairs consisting of /y/ and /u/ are to be analyzed W or W. The triple division of the letter Q seems much less problematic.

Statistical summary of 50 /u/ graphemes

Of the 50 /u/ graphemes used in the synopsis, five - (12., 25., 31., 33., 48.) - are listed in the dictionaries used in this study as the second variant; seven - (14., 16., 18., 34., 38., 39., 45.) - have been classified as occurring in no commonly used words. This leaves 38 graphemes which all occur in at least one common word. To complete this summary, however, it should be remarked that only 50 graphemes have actually been chosen from a total of 80 /u/ graphemes that this research has found. (It has been a meticulous, item-by-item search for all graphemes of the English phonemes because no such exhaustive survey seems to have been conducted to date.) Among the 30 graphemes beyond the 50 used here are some which occur in words which might almost be classified as common: flügelhorn (with ü for /u/), is probably familiar to many music-lovers, high school band members and their supporters. World travelers and many women know the word muumu (with uu for /u/) dresses. But familiarity and use of most other words in this category is probably even more limited. Some are obsolete or obsolescent, such as brougham (with ougha in its /brum/ variant), bowie knife (with ow); others occur only in words used by a limited group of speakers - (us in au jus and out in ragout) are known by frequenters of fine restaurants. Homoöusian (with öu for /u/) is known by theologians, the Bernoulli trial (with oull for /u/ in one of its variants) by theoretical statisticians, Geiger-Müller counter (with ü for /u/ by atomic scientists) and so forth. In short:

80 graphemes of /u/ have been culled from the dictionaries used

50 of these have been used in the synopsis

5 of these 50 are listed as second pronunciation variants

7 of the 50 occur only in less commonly used words

38 graphemes are left if both of these last two categories are discounted

By now it is probably no longer necessary to ask you to compare your estimate of the number of graphemes used to write the phoneme /u/. The phoneme /u/ is not exceptionally rich in graphemes; the phonemes /i/, /s/, and /_/ are even richer. This research, briefly described above, has resulted in the following figures. Postulating 40 English speech sounds (by adhering much closer to the standards set by the publications of Dwight Bolinger, H.A. Gleason and Charles Hockett than to those of dictionaries), the total number of graphemes are:

in practically all dictionary words: 1,768 = 1: 44.20

in words classified as common: 1,120 = 1: 28.00

in words listed as first variants among the common:

882 = 1: 22.05

Two critical remarks appear to be necessary before

conclusions are arrived at on the basis of these all-important data: (1) A linguist's judgement is fallible, of course, and the categories "common" versus "non-common" are far from clearly defined and their borderlines are blurred. (2) Considering all of what has been stated above concerning the second (and third and fourth) pronunciation variants, perhaps it is most judicious to suggest that a simplified practical average of graphemes occurring in commonly used words could be estimated by arriving at a modified mean rounded average between 1: 28.00 and 1: 22.05, i.e. 1: 24.00, while favoring the restrictive figure of first variants.

Far-reaching conclusions drawn from the statistics

Further speculations will be based on the suggested mean rounded average phoneme-grapheme ratio of 1:24. Probably you have compared your original estimate with this figure by now. If you erred, you are not alone.

- (1) The American Heritage Dictionary posits 43 phonemes and 232 graphemes;
- (2) Funk and Wagnalls Standard Dictionary, 46 phonemes with 251 graphemes;
- (3) The Office of Education's 1,716-page Phoneme-Grapheme Correspondences, (1966), posits 54 phonemes with 419 graphemes;
- (4) The Random House College Dictionary 45: 380 graphemes;
- (5) Webster's II New Riverside University Dictionary, 45:292;
- (6) Webster's New World Dictionary of the American Language merely lists a pronunciation key with 43 graphemes;
- (7) Webster's Ninth New Collegiate Dictionary, 46: 387.

Not a single one supplies any counts; they just enumerate the phonemes and their graphemes. None of the publications claim total coverage, and none supply phoneme-grapheme ratio figures. As part of the research for this study, numerical ratios were calculated. They are:

- (1) 1: 5.39, (2) 1: 5.45, (3) 1: 7.76 (4) 1: 8.44 (5) 1: 6.49
(6) 1: 7.76 (7) 1: 8.41

No available publication seems to have given any consideration to the potential significance of the quantification of these data. Yet their quantitative analysis suggests itself as the first decisive step towards a scientific evaluation of the learning difficulty of our -- or any other -- alphabetical orthographic system.

The entire research which has led to these key figures (the 1:24 average phoneme-grapheme ratio arrived at from 40 phonemes and 1,120 graphemes occurring in common words, 882 of them listed as first-pronunciation variants) has been conducted along the same lines described above with reference to the survey pertaining to

the graphemic symbols of /u/. In this comprehensive survey, however, all other dictionaries listed here (and in the reference list) have been utilized for phonemic analysis, supplementing Merriam-Webster (1985), on points where any of the other dictionaries - mainly Random House (1983) - seemed to offer an additional nuance. No other source of information - as to the phonemic structure or orthographic rendering of any item in the corpus -- and no personal interpretation of either of these fundamental data were included.

The obvious question arises at this point of why such a thorough in-depth study into so fundamental a matter has never been undertaken. Detailed speculations exceed the scope of this paper. However, it may be suggested that it is quite understandable that people tend to assume that the foundations of a centuries-old fortress such as orthography have been carefully investigated before by its users. Otherwise -- so the mostly subconscious reasoning probably goes -- it would not have served uncounted generations well and would have been abandoned by now. Illusions are easily sustained with this kind of logic. Even more importantly, it has probably been generally tacitly assumed that the teaching of reading and writing is exclusively a pedagogical matter. Our synopsis has actually worked to refute this assumption but it might be necessary to take another look at the pedagogical aspect in light of the in-depth linguistic investigation of the entire orthography.

It is a generally forgotten fact that the look-and-say method of teaching reading was born out of desperation with the traditional phonics approach. Considering this makes it less surprising that a widespread return to the original way (even in an improved phonics-first version which was highlighted, elaborated and promulgated by Rudolf Flesch) has not brought about any substantial improvement in reducing functional illiteracy in our schools.

The average phoneme-grapheme ratio of 1:24 implies with great clarity that the look-say method requires the tiresome rote learning of 24 times as many different word images as would be necessary if the ratio were practically 1:1 (as it is in Latin, Estonian, Finnish and Korean). That this observation is no exaggeration is attested to by the Office of Education's publication Phoneme-Grapheme Correspondences as Cues to Spelling Improvement. Its introductory statement starts with the following lines:

Spelling instruction in American elementary schools traditionally has been predicated on the assumption that there is an inconsistent relationship between the sounds (phonemes) of American-English speech and the symbols (graphemes) which represent these sounds in writing. Accordingly, many authorities on the teaching of spelling

have maintained that each spelling word must be considered a separate learning act (1; emphasis added).

This publication refers to "spelling" again as "the currently traditional method of merely memorizing letters in each word as a unit" (109; emphasis added).

My statistical tabulation of the graphemes of /u/ has provided clear evidence for the chaotic graphemic abundance representing just this single phoneme. The phoneme-grapheme correspondences for English orthography are reflected in the following statistics: 40 phonemes represented by 1,120 graphemes which occur in common words -- 882 of them in first-pronunciation variants. This analysis has also disclosed an intricate web of twelve graphemic categories. These groups could further be divided into at least ten subcategories on the basis of their representation by digraphs, trigraphs or quadrigraphs and whether their single letters fall into two halves or three thirds in terms of phonemes. In the grapheme groups of other phonemes, there are other aspects according to which subgroups could be established, as for instance on the basis of whether the phoneme in question is symbolized by the first or second or third half of a letter, of a digraph, a trigraph or a quadrigraph. If the phonics method were taught with strict consistency, an unwieldy number of grapheme groups would have to be recognized within the average 22 graphemes of each phoneme.

Assuming that no such intricate nets are actually taught, the logically reasoning learner has only two subconscious options. (1) He/she creates at least some -- probably hazy -- graphemic groupings; (2) His/her categorizing instinct is overwhelmed by the immense number of complications, and rote memorization blinds the reasoning processes of the mind.

The evidence of linguistic investigation reported thus far represents calculations based only on the lexical count. The greatly varying numbers of vocabulary items falling into each grapheme category comprise another component of an evaluative analysis reflecting an even far greater measure of the complexity of our orthography.

May I ask you once more to refer to your original estimate of the average number of graphemes for each English phoneme? Did you estimate 5-6? If you as a linguistics student, linguist or scholar placed your estimate this low, you can imagine what the estimates of linguistically nonsophisticated educators may be. If you placed your estimate between 8-10, I suggest it reflects your linguistic reasoning more than the prevailing impression of the average American. Having conducted a wide-ranging survey, I found that the vast majority of respondents had a very difficult time even comprehending the question. Once they understood, the range of their estimates was between 3 and 5. The fact that none of the publications which offer tables of phoneme-grapheme

correspondences supplies any quantification of what they list, let alone any phoneme-grapheme ratio, provides perhaps the most telling indicator of the total lack of attention paid to this overwhelmingly vital matter.

In summary, it seems that thus far hardly more than a nondescript, nebulous feeling has developed among linguists, educators and lexicographers of the less-than-ideal phoneme-grapheme ratio of English orthography, and so experts have not been moved to investigate this area.

(1) Educators have not done so perhaps because they have subconsciously assumed that our orthography need not be changed or more probably cannot be changed since there has been no such suggestion in recent times from linguists. Thus they have felt that they must solve reading problems within the confining parameters of the orthographic status quo.

(2) Linguists have not launched an in-depth investigation up to this point because:

a) they have, until recent times considered the teaching of reading to be chiefly the domain of educators and

b) most reading reform attempts (many of them ridiculous) have been initiated by linguistically ignorant laymen, and so an attitude of reluctance appears to have developed among linguistic scholars.

Thus far there has been no adequately convincing scholarly evidence of a definite connection between the tragic shortcomings of English orthography and mass functional illiteracy in the U.S. and England. Nor has there been any persuasive scientific evidence of a causal relation between the immense complexities of our orthography and the unduly slow progress of much of the learning process in our schools. The key role that our orthography has in the ultimate cause of widespread functional illiteracy has gone unrecognized. The finely honed tools of linguistics are now being used to provide this evidence at long last. This is the linguistic perspective of functional illiteracy.

This perspective widens considerably by comparing the resulting end quotient with the results of similarly conducted evaluative analyses of the orthographies of other languages. Though it surpasses the scope of this paper to delve into this virtually overlooked, yet immensely important aspect of our problem with functional illiteracy, a few brief remarks are necessary. The task of teaching and learning to read is incomparably easier in languages whose scholars were not bound by traditional shackles and who did not cling with religious fervor to unreasonable quirks of their orthographical inheritances, but did reform their writing systems time and again. The reforms were brought about by any one of the following three causes:

(1) The recognition that certain phonemes of the language had changed and consequently their graphemes had to be altered.

(2) The realization that certain graphemic symbols had either been

inadequate or had to be streamlined.

(3) The refinement of linguists' methodology in distinguishing between efficient and inefficient graphemic renderings and concomitant simplification.

The mere fact that the English word "spelling" has assumed the meaning of "orthography," in addition to its other current basic meaning, namely "sequentially enunciating the names of letters" (of which a word is composed) points to the tremendous cleavage between English phonemes and graphemes. In languages where a phoneme-grapheme identity exists -- Estonian, Finnish -- and even in such languages where various degrees of mere near-identity between phonemes and graphemes is found -- Czech, German, Hungarian, Italian, Russian, Serbo-Croatian, Spanish, naming only a few of the many -- there are two, basically different concepts and two different words for (1) observing the set of rules and conventions under which phonemes are symbolized by graphemes, and (2) enunciating the names of the component letters of a word in a sequence. Their reading pedagogy is in no way based on the names of the graphemes but rather on the sounds - phonemes - they represent. In fact, it might be stated with a minimum of oversimplification: in those systems the letters and letter combinations become the sounds and the sounds become the letters and letter combinations in the perception of the learners.

Becoming a "Nation of Readers" -- ?

One can but admire the judicious and circumspect substance-seeking work carried out by the National Academy of Education's Commission on Reading (Anderson et al., 1985), which cautiously evaluated the status of reading in the U.S. Its objective criticism of both teaching methods (look-say and phonics-first) lucidly points to the inestimable magnitude and array of difficulties both theoretical planners and experimenting researchers must face, who try to choose the best of both methods and even the better of two versions (explicit and implicit) of instructional strategies for the teaching of phonics. One is reminded of Topol's role in Fiddler on the Roof when he keeps weighing arguments and counterarguments, "...but on the other hand..."

The phrase "mapping the relationships between letters and sounds" (p.38) is an unfortunately apt one, lending itself to the analogy of navigation across a treacherous sea that must be crossed by teachers and learners alike. My underlining of the word "mapping" and the analogy drawn in no way distorts what the authors themselves point out in their report:

The more reasonable assumption is that phonics can help the child come up with approximate pronunciations - candidates that have to be checked to see whether they match words known from spoken language that fit in the context of the story

being read (38).

All that phonics can be expected to do is to help children get approximate pronunciations. These must be "tried out" to determine whether recognizable words have been produced that make sense in the context (41).

In languages whose orthography enjoys a phonemic-graphemic near-identity, this kind of ambiguity in decoding is unheard of. In English, it is the undeniable merit of many good teachers that appreciable levels of success are achieved with students. The Commission's report apparently agrees:

If the practices seen in the classrooms of the best teachers in the best schools could be introduced everywhere, the improvements would be dramatic (3).

The Commission admits that:

...the approaches to phonics recommended in programs available today fall considerably short of the ideal, and we call for renewed efforts to improve the quality of instructional design, materials, and teaching strategies (43).

The Commission draws the most logical conclusion from its thorough investigation:

It is unrealistic to anticipate that some one critical feature of instruction will be discovered which, if in place, will assure rapid progress in reading (4).

Most certainly no "feature of instruction" can do it! Within the confines of the existing orthography, that is all that can be said. As long as you are in water, you can only sink, swim or float. It is difficult to walk, let alone run. You have to get out of the water first.

Since neither method of teaching reading seems to be the answer, the conclusion is inescapable that the cause of the difficulties lies in the intrinsic nature of the existing English orthography.

Closing remarks

Just as Topol in The Fiddler on the Roof stops after much consideration, we must realize that there comes a point when one must conclude, "But there is no 'on the other hand'!" I am convinced that adequate further preparation and presentation of sufficient evaluative and comparative linguistic evidence will lead even persons now fervent in the defense of English orthography to the conclusion that they can no longer accept the

intellectual responsibility of defending it.

William Dwight Whitney offered the following conclusion about the English language in his article, How Shall We Spell? which first appeared in 1867:

...we have hardly the right to hand it down to posterity with such a millstone about its neck as its present orthography.

The "present orthography" referred to 120 years ago is still our present orthography...This regrettable fact seems to be more the answer to the question of why Johnny still can't read than any other single cause.

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IV

MORPHOLOGY

IN MEMORIAM:
Michael Eric Bennett
1953-1987

On August 7, 1987, Dr. Michael Eric Bennett presented his paper 'Alienable and Inalienable Possession in Malagasy' to the Forum at York University.* Slightly over a month later, Dr. Bennett was hospitalized with pneumonia, from which he died on October 15.

Since the time of the Second Forum at the University of Toronto in 1975, Michael Bennett had regularly participated in the Fora and other activities of LACUS. He had, in fact, missed only one Forum between 1978 and 1987. He authored six papers in previous volumes (1979 through 1986), and he was the co-author of seven others (1975 through 1981) with sociologist Elizabeth W. Nall under the joint pseudonym 'The Second Foundation'. From the time of his very first attendance at our meetings, furthermore, he was a regular and enthusiastic participant in the discussion of papers on a wide variety of topics. For the past couple of years, he had also served on the Long-Range Planning Committee of the organization, which was begun during the presidency of Victor Yngve.

From the beginning of his participation in our association and in linguistics in general, two characteristics were reflected in his work: a commitment to the cognitive-stratificational approach with its use of relational networks, and his interest in the study of a broad variety of languages. He had begun with the study of French and German, combined with an interest in Swedish, which he had spoken since childhood with his maternal grandparents. He later came to deal with languages as diverse as Amharic, Choc-taw, Hopi, and Malagasy, and he had at various times undertaken the formal or semi-formal study of Arabic, Hungarian, Japanese, and Turkish. He brought to these studies a special facility for practical phonetics which enabled him to rapidly achieve a native-like pronunciation in a language, even if he actually controlled only a few phrases in it. His personal library included grammars or textbooks on approximately ninety different languages with names ranging through the alphabet from Arikara to Zuni, the majority of them being 'exotic' tongues indigenous to all six inhabited continents and the South Pacific islands.

His collaboration with Dr. Nall also illustrated an abiding interest in the relation of language to social behavior, as illustrated by their several papers applying the relational network model to 'the social construction of reality' and related topics.

During most of his association with LACUS, Michael Bennett was a graduate student at Michigan State University. He had first come to the campus as a freshman in 1971, and at the end of 1974 he became one of the first two to receive a B. A. in linguistics from a program which had previously offered only graduate degrees. He completed an M.A. in 1978 with a thesis on the phonology of Amharic, and he finished the Ph.D. in 1986 with a dissertation entitled 'Aspects of the Simple Clause in Malagasy: A Stratificational Approach'. The need to work full-time to earn a living was the major factor prolonging his graduate studies. Unable to get a teaching position in the field, he was employed since 1979 as a clerk dealing with interlibrary loans in the Michigan State University Library.

Those of us in LACUS who knew Dr. Bennett will miss the contributions he could have made to the future of our organization. Many of us will also miss his friendship and the useful comments and clarifications he could have made on our own work.

NOTE

*The abstract of this paper appears on the following page. A slightly different version of the paper has been accepted for publication in *Word*.

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ALIENABLE AND INALIENABLE POSSESSION IN MALAGASY

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The Austronesian (= Malayo-Polynesian) family includes many languages with gender-like systems of two or more noun classes, the difference between such classes manifested primarily through alternations in accompanying possessive affixes and pronouns. Body parts and kinship terms are often in the same grammatical class, and it is common to speak of **alienable** and **inalienable** possession, although other terms have been applied, among them **dominant/subordinate**, **active/passive**, and **inherited/acquired**. This paper presents evidence for the alienable/inalienable distinction in an Austronesian language for which it is previously unreported, Malagasy. Witness (1) and (2):

- | | |
|--|---|
| (1) Misasa tanana i Rabe.
wash hands Rabe
'Rabe is washing hands.'
(only his own) | (2) Manasa tanana i Rabe.
wash hands Rabe
'Rabe is washing hands.'
(his own or someone else's) |
|--|---|

Sentence (1) has the intransitive verb **misasa** 'wash' despite the presence of an object: the "incorporated" object results in the verb having the morphological properties of a one-place rather than a two-place predicate. Moreover, such constructions are reserved for expressing strictly inalienable possession. In contrast, sentence (2), with an "unincorporated" object and the transitive verb **manasa** 'wash (something)', is ambiguous with respect to the alienable/inalienable distinction.

Since the meanings of '**Rabe is washing his own hands**' and '**Rabe is washing himself**' are obviously related (the former entails the latter, in fact), an approach which captures this relationship is a pearl of great price. The proposed analysis therefore treats expressions involving inalienable possession of body parts, as in (1), as special cases of reflexivity. A formal semological description is provided, and transitivity marking on verbs and "object incorporation" are also discussed.

Although Malagasy does not grammaticalize the alienable/inalienable distinction through overt alternations in possessive pronouns or affixes, the distinction nonetheless exists, albeit in reduced form. It may exist covertly in other Austronesian languages as well, waiting to be noticed. Since this has obvious ramifications for historical, comparative, and typological/universal studies, it is hoped that this paper stimulates further investigation of possession in such languages.

GENDER CLASSIFICATION IN RELATION TO SEMOLOGICAL AND INFLECTIONAL CLASSES IN A STRATIFICATIONAL MODEL

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0. Introduction. One fact which seems to justify the separation of morphology, lexology, and semology in a stratificational model of language is the existence of distinct classifications for grammatical nouns and their semological counterparts (here termed ENTITIES). In Classical Latin, for example, the syntactic (lexological) classification of nouns involved three genders, but these genders had no simple and direct relation to inflectional classes. Consider Table I, which shows the correlation of the genders with the five traditional declension classes of Latin morphology. Despite the fact that it glosses over certain distinctions¹, this table demonstrates that knowing the gender of a noun will not tell us its declension class, and knowing its declension class will not tell us its gender: for any gender there will be at least three possible declension classes, and for any declension class there will be at least two possible genders.

Table I. *GENDERS AND TRADITIONAL DECLENSIONS IN CLASSICAL LATIN.*

	MASCULINE	FEMININE	NEUTER
1	pōēta POET	porta GATE	-----
2	locus PLACE	mālus APPLE TREE	templum TEMPLE
3	rēx KING	lēx LAW	tempus TIME
4	lacus LAKE	manus HAND	cornū HORN
5	dies DAY	res THING	-----

The correlation of gender with meaning-based classes is also not a strong one in such a language, since though MALE and FEMALE entities normally relate to MASCULINE and FEMININE genders, respectively, nouns referring to other entities can belong to any gender. Even with animates, there can be exceptions, such as French *sentinelle* SENTRY, which is feminine despite having reference to males most of the time, or Spanish *victima* VICTIM, which is feminine regardless of the sex of its referent.

Facts of this sort seem to justify the establishment of three separate classificatory systems, which can be associated with three separate stratal systems: a semology, a lexology, and a morphology. The semology would include various meaning-based classifications, including that for sex. The lexology of a language like Latin would include a gender classification designed to account for syntactic concord². The morphology of such a language,

furthermore, would include still a third classification, incorporating the inflectional classes needed to capture various otherwise unpredictable facts about the details of noun inflection.

It seems fairly inescapable that three such classifications have to be included in any adequate account of such a language. Until recently, however, various stratificationists including the present writer had further assumed that these three classifications were simply independent systems, each associated with the tactic pattern of the stratal system involved. In the present paper, an alternative view is outlined: the three classifications are still separate, but they are at the same time interdependent so as to reflect certain predictable relations between them. Many of the relations involved are tendencies rather than absolutes, but they can still be worth incorporating if this simplifies the overall account. They include facts of a sort often pointed out by language teachers teaching gender, and they also have a good chance of being psychologically real for native speakers who have to master the gender system of their language, in that they allow various normal situations to be treated automatically, and require special attention only for the exceptional cases.

1. Preliminary Example: Spanish. The approach suggested here will first be illustrated with some data concerning gender in Spanish. Then a somewhat more complex example from standard Russian will be treated, and a brief discussion of the further application of the approach will be presented.

In Spanish, gender classification affecting ordinary nouns is confined to the masculine and feminine, though some expressions make it necessary to set up a third class of neuters for adjectivals used as abstractions. In this survey, major attention will be devoted to the masculines and feminines, but the overall account will also leave a place for the neuters.

- This account is designed to capture two basic sorts of facts:
- (a) With few exceptions, a noun designating a male person or higher animal is masculine, while that designating a female is feminine. (This is a correlation between the lexological gender classification and the semology. Examples include such semological/lexological correspondances as MAN/*hombre*, UNCLE/*tío*, GENTLEMAN/*cabellero*, and BULL/*toro*--all masculine--and WOMAN/*mujer*, GRANDMOTHER/*abuela*, NUN/*monja*, and COW/*vaca*--all feminine.)
 - (b) The unmarked type of masculine noun has the thematic suffix /o/, while the unmarked type of feminine has the thematic suffix /a/. This generalization has two types of exceptions: (1) there are some masculines in /a/ and one feminine in /o/; and (2) there are many items in each gender which have neither of these thematic suffixes. (This is a correlation between the lexology and the morphology. Examples of masculines in /o/, in addition to the three listed in (a) above, include *libro* BOOK, *estado* STATE, *momento* MOMENT, and *peligro* DANGER. Additional examples of feminines in /a/ include *fruta* FRUIT, *cosa* THING, *beca* SCHOLARSHIP, and *oficina* OFFICE. Masculines of

the more exceptional types include *día* DAY, *árbol* TREE, and *hombre* MAN; exceptional feminines include *mano* HAND, *madre* MOTHER, and *mujer* WOMAN.)

If these facts are considered in a broader context, it also becomes clear that the unmarked type of adjective has masculine /o/ and feminine /a/ in the same fashion as the unmarked noun types: *otro/otra* OTHER, *negro/negra* BLACK, *ligero/ligera* LIGHT (in weight) etc. Exceptional types here show no difference in gender: *mejor* BETTER, *azul* BLUE, *urgente* URGENT, etc.

The proposed approach to the treatment of the correlations in (a) is given in Figure 1. The lower part of this, marked LEXOLOGY, sketches the gender classification of noun phrases, each such phrase being either masculine or feminine (the unmarked neuter is reserved for the residue mentioned above). Here special classes must be set aside for those nouns which are not naturally either masculine or feminine. Those which do have natural gender, on the other hand, are listed together, and signals from the semology determine their gender. The exceptional *victima*, treated as a feminine regardless of its referent, is simply listed among the unnatural feminines, and its gender is correctly assigned, since these specifications have precedence over the natural ones.

The lexological marking of either masculine or feminine gender, then, can originate either from special grammatical assignment in the lexology, or from reflection of the semological categories MALE or FEMALE. In either case, there is a single masculine or feminine element at the bottom of the lexology. By devices not shown (but implied by the discontinuities of some lines) the gender mark is distributed to each potentially concordant adjunct in the noun phrase, as well as to the head.

Given these markings, the relevant morphology is quite simple to treat. All nouns and regular adjectives have the tripartite structure BASE plus THEME plus optional plural SUFFIX. The base includes various structures which may range from a simple root through more complex structures with one or more formational affixes. Themes include the exceptional type requiring special information about inflectional class, the regular feminine /a/, and the morphologically unmarked masculine/neuter /o/. All this is shown in Figure 2. It should be noted that this approach particularly simplifies the treatment of the morphological factors concerned because it does not require the inflectional separation of adjectives from nouns: their differences can be treated by the lexology.

2. Major Example: Russian. The situation in Russian is more complex in two ways: first, there are three full genders--MASCULINE, FEMININE, and NEUTER--reflecting the Indo-European background more directly; second, the overall gender system has a second dimension of ANIMACY, which crosscuts the non-neuter classes to give an overall system of five genders, as depicted in Table II. An example of each class is provided in the table.

Russian has two types of correlation between gender and semological classes: (a) as in Spanish, a noun designating a male person or higher animal will normally be masculine, and one design-

Figure 1. CORRELATION OF SPANISH GENDER WITH SEMOLOGICAL CLASSES.

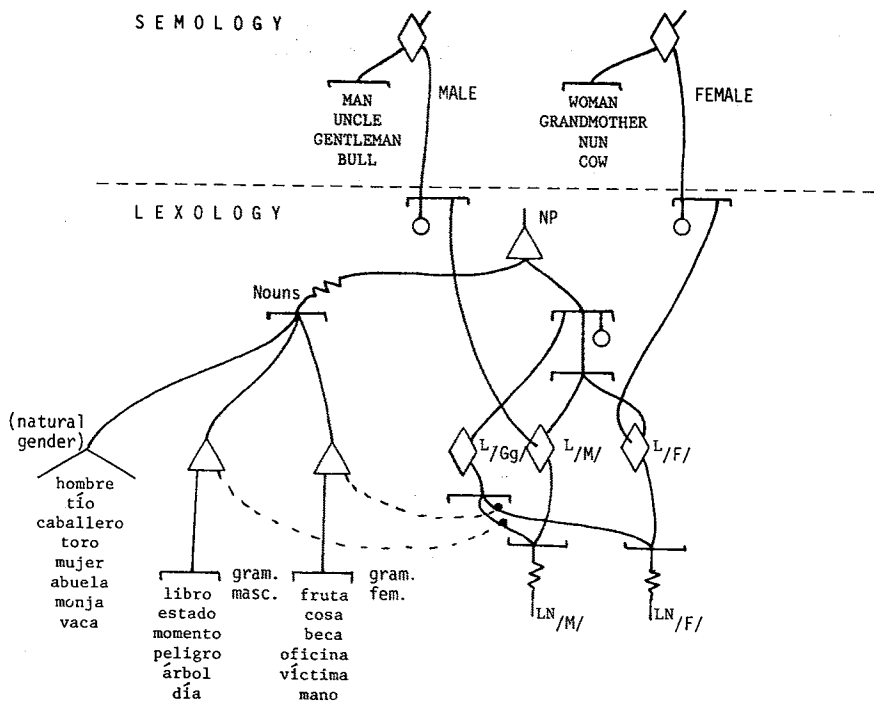


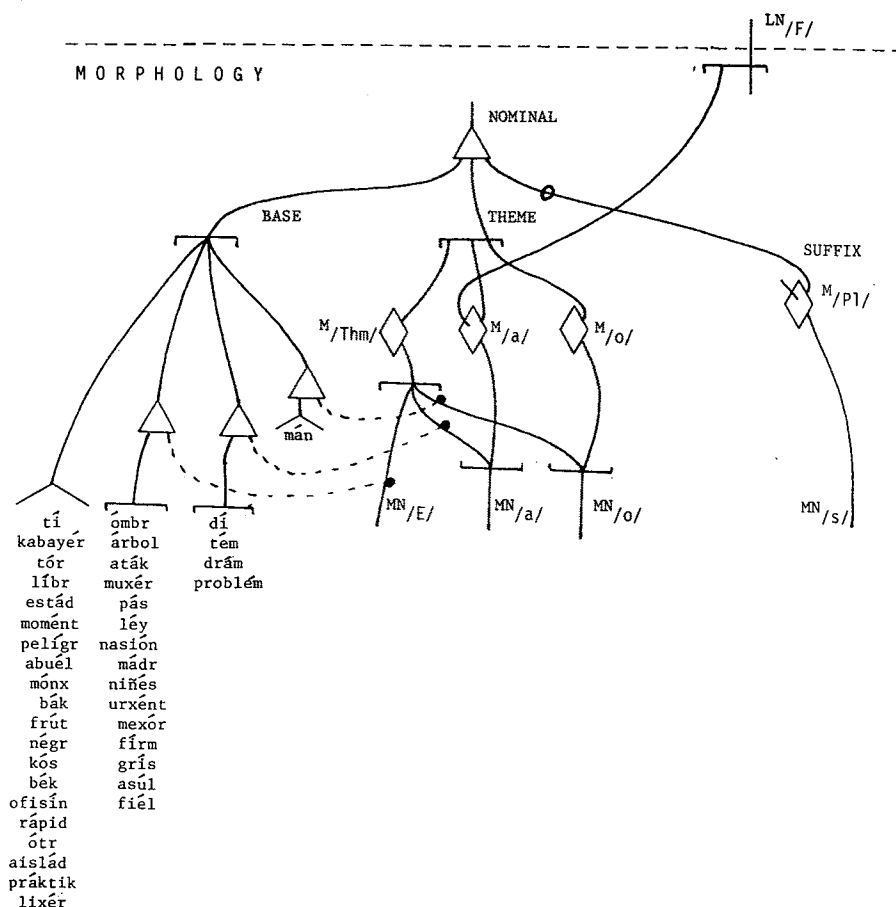
Table II. THE GENDER SYSTEM OF STANDARD RUSSIAN.

	MASCULINE	FEMININE	NEUTER
INANIMATE	MASCULINE	FEMININE	
	INANIMATE	INANIMATE	
	stól TABLE	kniga BOOK	NEUTER
ANIMATE	MASCULINE	FEMININE	slovo WORD
	ANIMATE	ANIMATE	
	byk BULL	sobaka DOG	

nating a female will be feminine³, (as in the typical Indo-European pattern, many nouns are still assigned to the masculine or feminine gender on a grammatical basis); (b) the basis of the ANIMATE vs. INANIMATE distinction is almost purely semological⁴.

Most masculine and feminine animates and all neuters have a completely natural gender assignment based on semological factors.

Figure 2. SPANISH GENDER IN RELATION TO MORPHOLOGICAL SUFFIXES.



Examples for the masculines include *mužčina* MAN, *otec* FATHER, and *byk* BULL; some feminines are *ženščina* WOMAN, *doč'* DAUGHTER, and *korova* COW; and some neuter examples are *vremja* TIME, *selo* VILLAGE, and *ruž'ě* RIFLE. Special lexotactic classes are needed, then, only for the unpredictable masculines and feminines, which are mostly inanimate.

There are also very strong correlations of gender class with inflectional classes in Russian. Some of the basic types involved are presented in Table III, which further indicates that the patterns involved form the unmarked inflection for each of the five genders indicated. Apart from further details involving special subclasses not treated here⁵, there are two important exceptions to these gender/declension correlations. One of these is a group of masculine animate nouns with the inflection normally character-

istic of feminine animates. This includes such productive types as masculine diminutives. The other is what is here termed the i-class--certain nouns of all three basic genders with exceptional patterns. Only the feminine pattern among these is productive, there being only one masculine and just a handful of neuters, and only the feminines include animates. Examples of these inflectional patterns are given in Table IV.

Table III. *PARTIAL PARADIGMS FOR THE UNMARKED TYPES OF RUSSIAN DECLENSION ASSOCIATED WITH EACH GENDER*

	MASCULINE INANIMATE	MASCULINE ANIMATE	FEMININE INANIMATE	FEMININE ANIMATE	NEUTER
GLOSS	TABLE	TOMCAT	BOOK	DOG	WORD
Nom Sg	stol	kot	kniga	sobaka	slovo
Acc Sg	stol	kota	knigu	sobaku	slovo
Gen Sg	stola	kota	knigi	sobaki	slova
Ins Sg	stolom	kotom	knigoj	sobakoj	slovom
Nom Pl	stoly	koty	knigi	sobaki	slova
Acc Pl	stoly	kotov	knigi	sobak	slova
Gen Pl	stolov	kotov	knig	sobak	slov
Ins Pl	stolami	kotami	knigami	sobakami	slovami

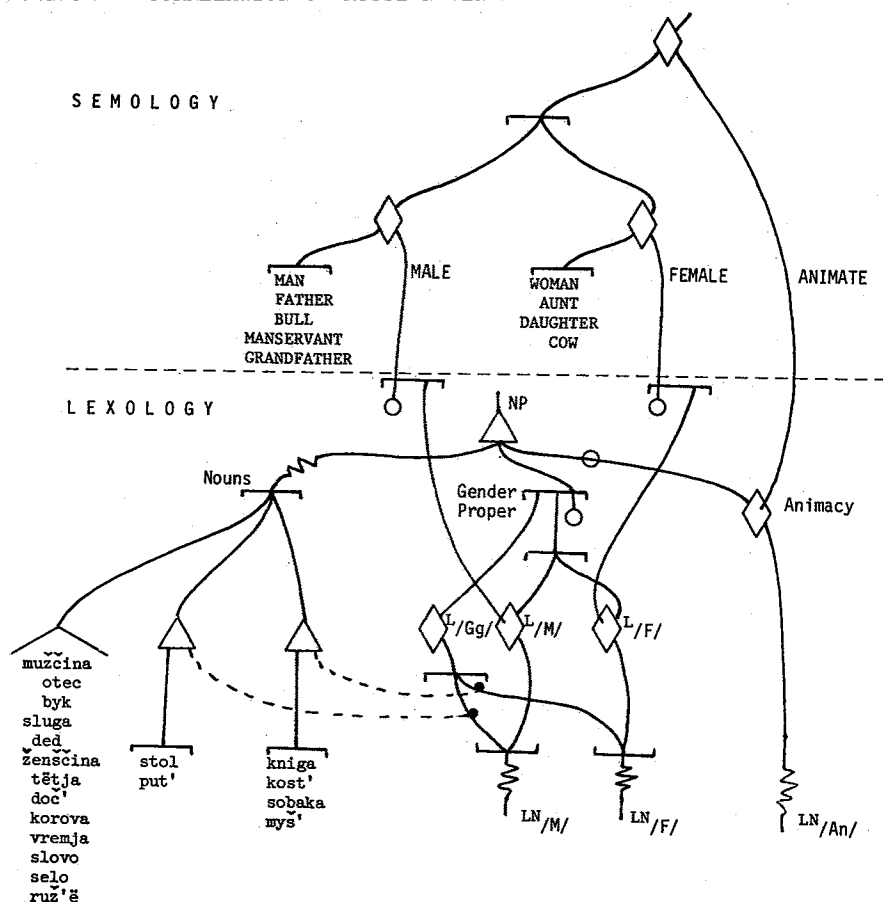
Table IV. *PARTIAL PARADIGMS FOR THE EXCEPTIONAL TYPES OF RUSSIAN DECLENSION*

	MASCULINE ANIMATE/a	MASCULINE/i	FEMININE INANIMATE/i	FEMININE ANIMATE/i	NEUTER/i
GLOSS	MANSERVANT	ROAD; WAY	BONE	MOUSE	TIME
Nom Sg	sluga	put'	kost'	myš'	vremja
Acc Sg	slugu	put'	kost'	myš'	vremja
Gen Sg	slugi	puti	kosti	myši	vremeni
Ins Sg	slugoj	putem	kost'ju	myš'ju	vremenem
Nom Pl	slugi	puti	kosti	myši	vremena
Acc Pl	slug	puti	kosti	myšej	vremena
Gen Pl	slug	putej	kostej	myšej	vremen
Ins Pl	slugami	putjami	kostjami	myšami	vremenami

Figure 3 shows the correlations between gender and semology. This diagram follows the same pattern previously shown for the Spanish material, with the addition of the factor of animacy.

There are greater differences between the Spanish and Russian data in the correlation of gender with morphology, given especially the fact that Russian attributive adjectives have a different pattern of inflection from the nouns. Still, when gender is considered relevant for the nouns themselves, a given noun requires one to consider gender along with case and number, just as in an adjective. For the moment, however, only the noun inflection will be considered. It should first be noted that the two parts of Figure 4 illustrate that a consideration of syntactic gender for a noun can allow a significant simplification in the number of clas-

Figure 3. CORRELATION OF RUSSIAN GENDER WITH SEMOLOGICAL CLASSES.



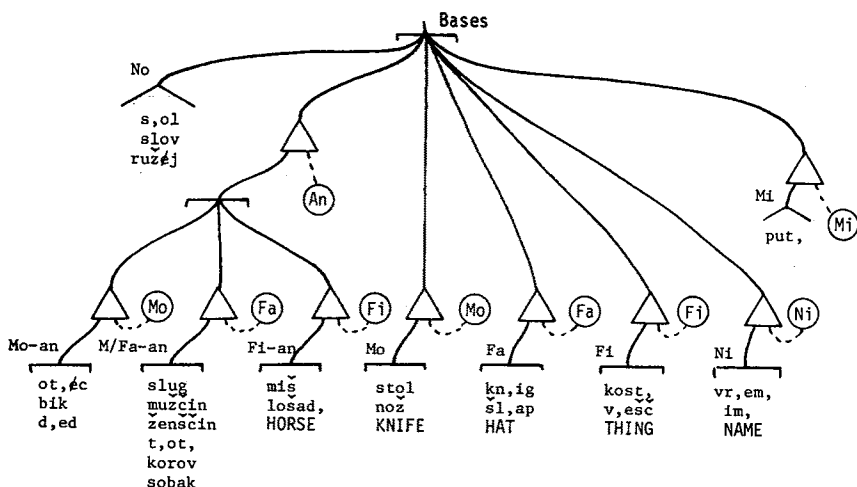
ses needed in the morphology: the nine classes otherwise needed reduce to just three when information about gender is available⁶.

Figures 5 and 6 then present treatments of the noun desinences considered here when using the gender information. If this is compared with the treatment accompanying the nine-class system with no consideration of adjectives, the nine-class approach is actually slightly simpler. When adjectives are considered, however, the system making use of gender information for the nouns turns out to give the simpler account⁷.

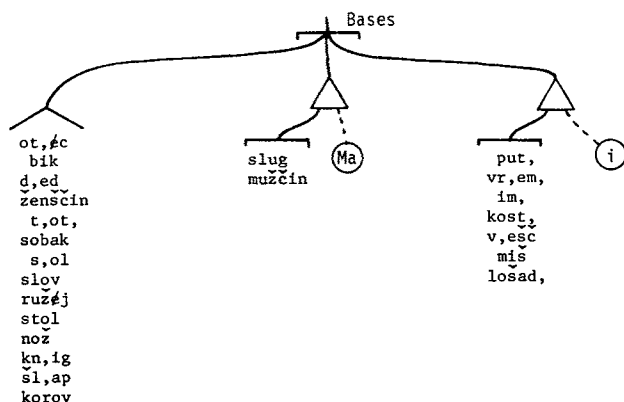
3. Conclusions. This research shows that even when syntactic gender is only partly correlated with factors of semological and inflectional classification their incorporation can still help to simplify a stratificational account of the facts. This implies that such correlations should be considered whenever they might be relevant.

Figure 4. TWO APPROACHES TO THE INFLECTIONAL CLASSIFICATION OF RUSSIAN NOUNS

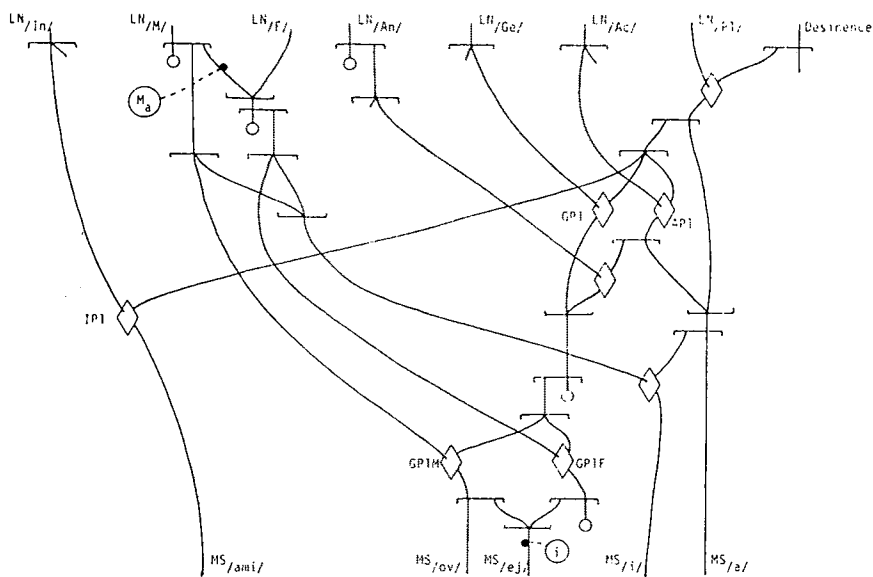
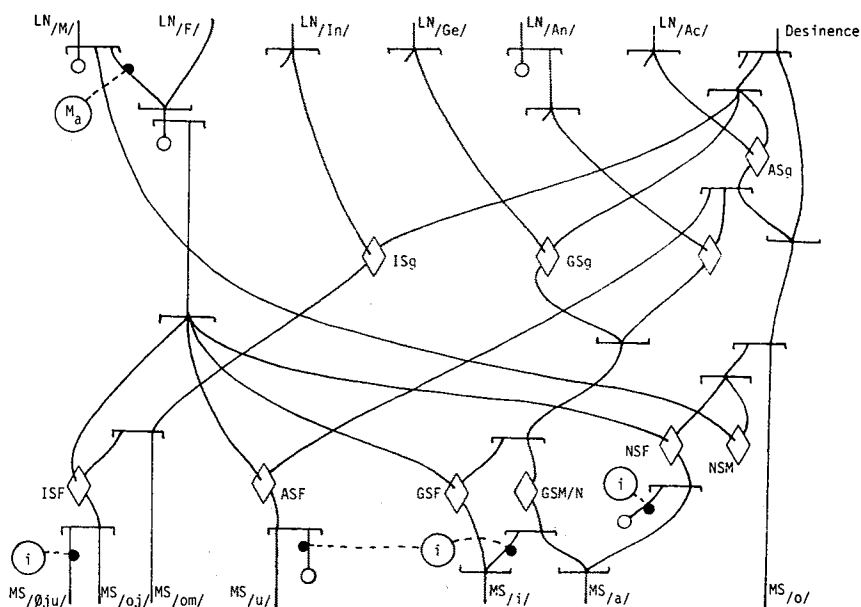
(a) Full Classification



(b) Basic Classification



The specific cases of the use of semological information to simplify the lexology have involved sex and animacy, but it should be pointed out that other languages may have other types of correlations which may be equally significant. According to Swan 1978: 20, for example, members of the following semological classes are at least facultatively animate in the grammar of Polish: car names, cigarettes and cigarette brands, currency, dances, games, and mushrooms.

Figure 5. *SOME PLURAL DESINENCES IN BASIC RUSSIAN DECLENSION.*Figure 6. *SOME SINGULAR DESINENCES IN BASIC RUSSIAN DECLENSION.*

Also, when there is a fair degree of correlation between gender and inflectional pattern, it is desirable to make information about noun gender available to the morphology. This conclusion is contrary to what was assumed in Lockwood 1972, where any deviance from strict correlation between gender and inflectional class was taken to justify a complete separation of these classification systems. This assumption was further reinforced by the traditional view that a noun belongs to a gender class, while other items such as adjectives and verbs are inflected for gender by virtue of having contrastive forms reflecting this difference. The system advocated here does not, however, violate the latter position, since a given noun will still be inflectable in only one way.

It seems likely that the relations of genders to semological classes are more likely to be present in a language with gender than the relations of genders to inflection: Nouns might, for example, be uninflected, be all treated the same, or be subclassified in a manner unrelated to gender. Connections like those discussed for Spanish and Russian, however, seem to be widely present in the Indo-European family, particularly in ancient languages, modern Slavic, and most of Romance. The existence of gender/inflectional correlations seems less clear, however, in French and most of Germanic. These groups and most others should be more thoroughly investigated from this point of view before firmer conclusions can be reached.

NOTES

¹These include the fact that neuters are always distinct in view of their special nominative plurals and their lack of a nominative/accusative distinction in both numbers, and also such distinctions as that between the historic i-stem and consonant-stem patterns in the third declension.

²The term GENDER is understood in a sense broad enough to include systems having no relation at all to sex distinctions: any classes that function in a manner similar to Indo-European genders, regardless of their basis, are covered by the term.

³Generic terms for animals, however, are commonly either masculine or feminine in an unpredictable fashion, e.g. *medved'* BEAR (masculine) but *lošad'* HORSE (feminine).

⁴The one exception normally cited is *tuz* ACE (in playing cards) which forms a class by itself, since it is treated as animate in the singular but inanimate in the plural. This exceptional case is ignored in the account presented here.

⁵Special subclasses need to be established to deal with exceptional suffixes, particularly in the nominative and genitive plurals of masculines, for the occurrence of stem extensions in the plural or singular, and for various peculiarities of accentuation. See Sullivan 1969 for examples of the classifications required.

⁶Stems in this figure are presented in a MORPHONIC transcription roughly equivalent to a classical morphophonemic representa-

tion. The corresponding material in Figure 3 and Tables II through IV has been presented in the standard transliteration of the Cyrillic orthography. Special elements in the morphonic transcription include /,/, a separate element for palatalization, and /ɤ/, a symbol for the front fleeting vowel, subsuming an alternation between an overt vowel and zero, as in (classical phonemic) /at,éc/ FATHER vs. /atcá/ OF FATHER.

⁷Details on the specific accounts compared and the simplicity counts involved are available from the author on request.

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V

SEMANTICS

IDIOMATICITY AND PASSIVISATION*

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1. Introduction

I should like to confine myself to the passivisability of idioms consisting of 'verb+noun' structures, i.e. kick the bucket, pull a person's leg and take place, and to investigate conditions for (non-)passivisation of idioms.¹⁾ I hope that these conditions will have universal implications. That is, the idioms to be analysed here are mainly English, but some conditions for (non-)passivisation will apply to idioms in other languages.

Idioms can be defined according to syntactic and semantic criteria, and most of their definitions take both factors into account. For the sake of the argument which follows, I will take idioms to be any sequence of words which is syntactically and semantically restricted (cf. Crystal (1985:152)). In the discussion which follows, the acceptability judgment of example sentences will be made only of their idiomatic interpretations, unless stated otherwise.

2. Syntactic Criteria

The following five types of idioms may be identified ('+' means that the type is subject to passivisation, '-' means that the type is not subject to passivisation, and '+/-' means that the types are either subject to passivisation, or are not subject to passivisation).

	passivisation
1) V + one's + N	-
2) V + a person's + N	+
3) V + $\emptyset$ + N	+/ -
4) V + the + N	+/ -
5) V + a + N	+/ -

1) 'verb + one's + noun' idioms cannot passivise:

- (a) The Government dragged its feet on devolution.
*Its feet on devolution were dragged (by the Government).
- (b) He always keeps his head.
*His Head is always kept.

Other examples include break one's neck, clap one's hand, and show one's face.

2) When 'one's + noun' is not coreferential with the subject (shown as 'a person's' distinct from 'one's' which is coreferential with the subject), the idioms can passivise:

- (a) He pulled my leg. = My leg was pulled.
I had my leg pulled.
- (b) Ian twisted my arm. = My arm was twisted.
I had my arm twisted.

Other examples include break a person's heart, call a person's bluff, darken a person's door and steal a person's thunder.

3), 4) and 5) need some explanation. The idioms which belong in these types seem to depend largely on whether or not they can take modification (adjectives and quantifiers), as the following examples suggest:

- (a) He made remarkable progress in his report. = Remarkable progress was made in his report.
- (b) He took great pains with his work.
=Great pains were taken with his work.
- (c)*Rooms are changing constant hands.
*Constant hands are being changed with rooms.
cf. Rooms are changing hands constantly.
- (d)*He lost honourable face in the tennis match.
*Honourable face was lost in the tennis match.
cf. He lost face honourably in the tennis match.

Those examples in the first type include gain ground, make headway, take action and take steps. Those examples in the second type include beggar description, follow suit, hang fire, and pass muster.

Incidentally, none of the idioms given earlier can undergo a get-passivisation:

- (a)*My leg got pulled.
- (b)*Remarkable progress got made in his report.

3. Semantic Criteria

3.1 Idiomatic and Literal Meanings

Not all idioms have both meanings. In some idioms, the idiomatic meaning is so predominant that the meaning either erases the literal meaning, or makes it difficult for us to think of the literal meaning. For example, take place, face the music and hang fire (?). On the other hand, some idioms keep both idiomatic and literal meanings, and the idiomatic meaning is usually predominant in most idioms. For example, break the ice, kick the bucket and spill the beans. But some idioms seem to occur with almost equal frequency as regards their idiomatic and literal meanings, and the determination of the meanings often/always depends on the context in which the idiom is used. In my corpus, such examples include fly a kite, make a splash and pull a person's leg.

3.2 By-Agents

As regards the passivisability of idioms in the latter type, they can all passivise. But what strikes me as interesting is that, when they have by-agents, the meaning is usually literal, and when they do not, both meanings, idiomatic and literal, are possible. The following examples seem helpful:

- (a) My leg was pulled by John. - literal
- (b) My leg was pulled. - literal and
idiomatic
- (c) The hatchet was buried by Jack and Mary.
- literal
- (d) The hatchet was buried. - literal and
idiomatic

On the other hand, such idioms as wipe the floor (with) and kick the bucket have only a literal meaning in their passivisation irrespective of by-agents as in

- (a) The floor was wiped by Mrs Mop. }
- (b) The floor was wiped. } literal
- (c) The bucket was kicked by John. }
- (d) The bucket was kicked. } literal

The following idioms are some of the respective types:

pull a person's leg type kick the bucket type

break the ice	chew the cud
bury the hatchet	cut the cackle
clear the air	see the light
fly a kite	take the air
make a splash	?take the cake
pull the strings	turn the tables
rock the boat	wipe the floor (with)
spill the beans	
turn the corner	

The question is, what differentiates the two types of idioms in terms of their passivisability? Two points are worth emphasising here.

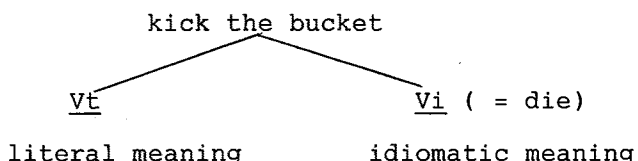
Firstly, the by-agent cancels the idiomatic meaning of an idiom. This is possibly because focus marking is placed on the by-agent, which, in turn, de-emphasises the idiom. The idiom always needs emphasis in its entirety (cf. Chafe (1968:125)). This, furthermore, suggests that any grammatical change which goes to de-emphasise the idiom unit prevents the idiom from having an idiomatic meaning:

- (a) It is the hatchet that Jack and Mary buried. - literal and idiomatic
- (b) The hatchet, Jack and Mary buried. - literal and idiomatic
- (c) It is the bucket that John kicked. - literal (?)
- (d) The bucket, John kicked. - literal (?)

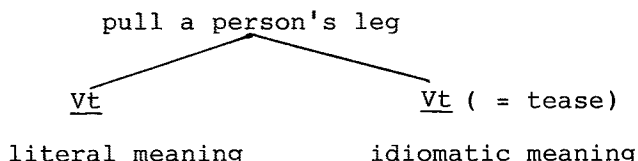
The other point is that those idioms which retain their idiomatic meaning after the passivisation without the by-agent have a relative transparency between literal and idiomatic meanings. That is, those idioms which retain their idiomatic meaning in the passive form without by-agents have a higher degree of transparency between literal and idiomatic meanings than those idioms which do not allow passivisation in their idiomatic sense. In other words, those idioms of the kick the bucket type retain a stronger semantic amalgamation, where a 'verb + noun' structure has been turned into an intransitive, as in

- (a) chew the cud = ruminate
- (b) kick the bucket = die
- (c) kiss the dust = be completely defeated
- (d) take the air = go for a walk
- (e) take place = happen
- (f) take root = become established

Schematically, the structure can be represented as follows:



On the other hand, an idiom such as pull a person's leg seems to have the following structure:



Finally, it seems interesting to make comparisons among languages between similar idioms together with their possible semantic change, i.e. literal vs. idiomatic, resulting from some transformations. An idiom in Japanese equivalent to pull a person's leg in English, although the meaning is slightly different, retains its idiomatic meaning irrespective of its passivisation with a by-agent:

- (a) John-wa Bill-no ashi-o hippata
 (=leg) (= pulled)
 (John pulled Bill's leg (John trapped Bill))
- (a') Bill-wa John-ni ashi-o hipparareta
 (= was pulled)
 (Bill's leg was pulled by John (Bill was trapped by John))
- (b) John-wa watashino kao-o tubushita
 (=my) (=face)(=lost)
 (John lost my face)
- (b') watashino kao-wa John-ni tubusareta
 (My face was lost by John)

I have also given a German example, which is more or less similar to the English one:

- (a) Leonhard nahm ihn auf den Arm.
 (= Leonhard teased him)
- (a') Er wurde von Leonhard auf den Arm genommen.

In German, idiomatic meanings seem to be retained after the passive transformation.

Taking account of the following implications:

- (1) The nature of the passive differs from language

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Note

1) Quirk et al. (1985: 162-167) set up five kinds of passive constraints: (a) the verb, (b) the object, (c) the agent, (d) meaning, and (e) frequency of use. Most of these constraints, however, have no direct effect on the 'verb + noun' idioms under discussion.

Bolinger (1975) discusses some passive restrictions on idioms, mostly of 'verb + noun + preposition' structure.

In what follows, more attention will be paid to passive constraints specific to idioms of 'verb + noun' structure.

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Analysis and Synthesis
A Study of Way and Manner
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1. As in Bäcklund 1986 a and b, I am advocating here an operational approach in the spirit of Gustave Guillaume. In such an approach the act of language, i.e. the mental processes involved in the transition from tongue to discourse, is analyzed. Tongue is the potential stored in the mind, and discourse is the actualization of that potential in the use of language.

1.1 The reason why I have adopted this approach is that I have found that my own findings in earlier studies in the field of English semantics tie in neatly and in a striking way with Guillaume's ideas. Also, work within this framework seems to clarify a large number of issues that so far have defied attempts at explanation in more conventional models of linguistic research.

1.2 Guillaume's theory rests on three basic tenets: (1) Human perception is mediate; (2) Human language presupposes that the mind can see itself in operation; (3) Human language is founded on spatialization of time.

1.2.1 Tenet 1. According to Guillaume, we see an object X only through an image in the mind based on memories of earlier perceptions of similar objects: "We see the external universe only through the medium of the universe-view we carry in our minds" (Guillaume 141). "I grasp the image within my mind and bring it out to look at it, and this movement coincides with a realizing treatment. I never see anything but mental inwardness realized mentally" (Guillaume 141-42).

1.2.2 Tenet 2. Guillaume defines the linguist's task as follows: "Language presupposes that mental activities are mentally perceived and prehended; but language need only produce something effectively sayable (Y, i.e. a name for the perception X) from this mental perception, need only make it expressible. To explain the efficacy of this making something sayable out of something thus seen, the linguist must be able to translate it back into something seeable (he must identify the see2 that has selected Y)" (Guillaume 123; my comments added in brackets). "Mental activities" consist mainly of the perceiving of external objects, which I will call see1, henceforth called s1, and "mental perception" is what I call see2, henceforth termed s2. The term prehension should be interpreted as referring to s2 acquiring the time extension of s1. Another important point is that the time extension of s2 must be well defined, i.e. externalized, for it to be identifiable. This leads to an important principle:

(a) The externalization of Y requires the externalization of s2.
1.2.3 Tenet 3. "It has been put this way: the human mind is so made that it has the experience of time, but has no representation of it (it must, therefore, invent this representation, which will be a spatialization, representability being a property of space, and of-space alone" (Guillaume 6; my underlining).

2 Spatialization of time implies that time is externalized, assuming spatial properties. Principle (a) indicates that the time of s2 must be spatialized for Y to become external. We will see how this is brought about.

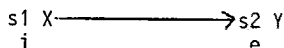
2.1 Language is representation, i.e. a perception X is represented by a name Y. Guillaume's theory recognizes the simple fact that an act of language, like any other act, takes time. Thus, representation is a movement in time from an internal to an external element:

Fig. 1



For Y to represent X it is necessary that Y be withdrawn from its external position to the position of X, i.e. Y must be internalized in order to represent X in time. However, Y's movement to the right cannot go on interminably, of course, and so an external element must take up the position that Y has just left. Now, if we think carefully about it, we realize that representation cannot of course be an automatic process, independent of the speaker's activity. Fig. 1 must be modified accordingly, since it is s2 Y that represents s1 X:

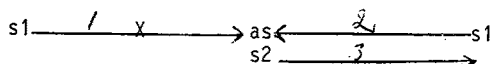
Fig. 2



Just as in Fig. 1, an external element must replace the s2 Y that has been internalized. To achieve that, the time extension making up the movement from left to right must be defined, i.e. externalized. Since only s1 is observable, it is only the time extension of s1 that can be measured, and so the representation in Fig. 2 presupposes that the time of s1 X has been spatialized. As soon as this occurs, "prehension" takes place, i.e. s2 adopts the time of s1. This makes s2 capable of moving to the right in order to serve as a concrete end point for the movement of Y, on condition that s2 is accompanied by X as its object. We see that s2 is inserted in order to be reinstated as an external element, making X external. Similarly, Y is internalized in order that it may be externalized in time.

3 Mediate perception implies that s2 is contained in X, the perceived object: "I see s2 (Y) in X". However, s1 X must be processed in order for X to be able to embed s2. Hence, X must be internalized, moving together with s1 towards s2 (Y), implying in this way an ongoing processing. This processing is represented by arrow 1 in Fig. 3:

Fig. 3



Arrow 1 represents a confident moving forward of s1, together with X, towards as. However, as this goal is reached, mere confidence is just not enough. S1 X must be tested as to its validity to serve as the basis for the selection of Y. Hence, s1 X must be externalized, i.e. defined in time, so that s2 may adopt its time extension. Arrow 2 portrays the testing, while arrow 3 represents "prehension". As is what Guillaume calls the "center of inversion", reversing the movement of arrow 1 to become arrow 2, which is again reversed into the movement represented by arrow 3. Now, the verb call is more dynamic than see in that it signifies movement. Therefore, we are well advised to use call instead of see in our analysis.

3.1 The dynamicalness of call is evident in such sentences as:

- (b) "John"/"Fire", she called.
- (c) She called her husband.

Call carries the meaning 'cause someone to appear in order for him to be active', and it does not necessarily imply an utterance. In (c), call can refer to 'cause someone to be ready to start a telephone conversation' or 'wake up' besides 'cry'.

3.2 The process through which a Y is attached to X, i.e. the act of language, starts with the selection of X in the constant stream of perceptions that impinge on the mind:

Fig. 4 $\xrightarrow{\text{call}} X$

Call (s1), henceforth termed c1, moves forward until it clashes with X moving in the opposite direction. X becomes internal, ready to be carried off again in a movement to the right. But this reversal cannot occur until X has been withdrawn all the way. To remove the obstacle for such a complete withdrawal a new call, representing s2, henceforth termed c2, is superimposed on c1, whereby the externalness of X is reinstated:

Fig. 5 $\xrightarrow{\text{c2}} c1 \quad X \quad Y$

However, this only means that the conflict is just moved one step to the left, to c2. But a step toward the final solution has been taken in that an Y has been selected, making up the starting-point for the backward movement that clashes with c2 moving to the right. The time of c2 is measured against the time consumed by this backward movement, containing Y, X, and c1. Co-time is being measured between c2 and this externalized time extension. In order to solve the conflict contained in c2 (see Fig. 5), and in order to make Y alone, as a point, represent the time extension of the backward movement in Fig. 5, c1 is moved to a position in front of c2, pulling with it X, which is thus inserted as an internal element. This yields:

Fig. 6 $c1X \quad c2 \quad Y$

As we will see, this corresponds to the construction "be calling John". However, as principle (a) tells us, a proper externalization of Y requires that the time of c2 be properly defined. Proper names and ordinary names find different ways to such a solution. Let us first look at proper names.

3.3 In the following sentence, c1X in Fig. 6 is split up into c1 and c1X and Y is equated with c2:

(d) She calls him John.
 $c1 \quad c1X \quad c2$
 $i \quad e \quad i \quad e$

This is uttered by someone who has heard a woman call "John". He concludes that c1X (X is a person) is externalized in the sound constellation "John". "See X" provoked the utterance at the moment of naming, i.e. the first time someone called X John, and later on, when the link between X and Y is established, the utterance is used to provoke "see X". The speaker projects X into him. C1 is an inserted element, necessary to make c1X external. The time of this c1, making up the speaker's own perception, is measured against the time taken up by X moving to John, i.e. the name John. This measurement of co-time constitutes the speaker's hypothesis that the name John represents "him", causing a specially selected person to react by appearing at the sound of his name, i.e. t that this person is 'made present again' (the meaning of represent). John, the real person bearing this name, can as it were be externalized prematurely in:

(e) She calls his name.

This implies that the actual calling, the utterance "John", has established co-time with name. Then, the time of the internal c1 is measured against this. However, this implies a premature conclusion, since the time extension

of $c1X$ has not been defined. The following is the only way to such a definition:

(f) I am calling be Y (an underlying structure)

$c1$ $c1$ $c1X$ $c1$
 be be
 i e

Be is inserted in order that it might be reinstated as an external be . The rationale of this is to get a definition of the time extension of $c1$ in that $c1$ is embedded in be . At the same time Y is internalized, causing the externalization of $c1X$ in the suffix -ing. Now, (f) leads to either of the following structures:

(g) She is calling Y.

$c1X$ $c2$

(h) I am calling be Y as (underlying structure)

$c1$ $c1$ $c1X$ $c1$ $c2$

In (g), the internal be proceeds in time to Y, which means that the speaker does not control time the way he does in (f), where be is made to proceed to itself. $C2$, or rather the time extension of $c2$, is externalized in the suffix -ing. This means that the speaker is still uncertain whether the utterance "John" really calls forth the real person John. The -ing suffix expresses a hypothesis to that effect, (h) is his means of testing the hypothesis. Be is inserted to become as . As stands for $c2$, and the insertion constitutes a hypothesis as to $c1$ (be) being capable of lending its time to $c2$. This insertion externalizes Y:

Fig. 7

(I) am calling Y as (she) call s name ← John
 $c1$ $c1X$ e $c2$ $c1$

Now, ing is inserted into the as-clause in order to be reinstated as a punctual external element in s . As a compensation, Y (John) is given time extension proceeding to name ($X2$). Thus, we see that what as achieves is to replace him in (d) by name, causing a reversal of roles between him and John. John is made internal in order to be represented by $X2$ (name). Next, s ($c1X$) is inserted into as, thereby externalizing the $s2$ that was contained in as. Also, John is externalized as a "point"; thereby, it is confirmed that $X2$ represents, 'makes present again', John, i.e., it is confirmed that John can be seen ($s2$ represents a "deeper" seeing). As we will soon see, the difference between proper names and ordinary names is that in the latter case $s2$ is made internal, proceeding in time to Y, being represented by Y:

Fig. 8

s
 as (she) call(s) name John
 $s2$ $c1$ $c1X$ $X2$ y
 $c1X$ e e

The s , deriving from name, is attached to call through the following operation:

Fig. 9

I call John as she call s John
 $c1$ $c1X$ $c1$ $c2X$

$C1$ is inserted, merging with $c1$ under as (the speaker's and the woman's $c1X$ merge), causing X to be externalized as an additional object of $c2$. $C2X$ calls forth a new conjugational ending -s, resulting in "She calls John". The hypothesis of (g) is confirmed now in that $c2$ ($s2$) has become punctual. Also, this $c2$ has both X and Y as objects, implying "see X " = "see Y ". We note specifically that calls has two different configurations:

Fig. 10

$calls$ (in (d) and (e)) $calls$ (in "She calls John")
 $c1$ $c1X$ $c1$ $c2X$

As we will see, the underlying structure for the production of ordinary names differs significantly from the above. The reason for this

is the commonly known fact that an ordinary name has a built in appeal, whereas a proper name lacks this property. This implies that the perception X needs to be tested as to its qualification for a special Y to be assigned to it in the case of the production of an ordinary name, while the production of a proper name requires no such testing:

Fig. 11

a That's (no time) John. He is called John.

b That's (+ time) a tree. That can be called a tree.

The appeal of b is manifested in the modal can and the Indefinite article, and, most importantly, in be acquiring time extension. We will now look more closely at the production of ordinary names.

4.1 The examination of X that results from the presence of an appeal consists of a sifting process, in which only the marks that have relevance for a special Y to be assigned to X are being focussed. That means that name does not arise from a simple deduction, as in the case of proper names. Rather, the speaker himself must see to it that the attachment of Y to X is fully motivated, i.e. name follows upon a close investigation of X as the resulting conclusion. That is why such an example as (i) is impossible:

(i) *I called the name of John's act/property.

It follows from this that "call X Y" has a different underlying structure than in the case of the production of a proper name:

Fig. 12

a	(she) calls	him	John (name)
	c1	c1X/"John"	c2
b	(she) calls	him	clever
	c1	c1X	c2 Y

Thus, Y in b has the same status as John signifying the real person bearing that name, as in "She calls John".

4.2 Recapitulating the process leading to "She calls John", we find that "She is calling John" ((g)) implies that c1 must be superimposed to lend time to c1X, and the time of c1X must not be punctual, as in "She calls him John" ((d)). The configuration contained in (g) means that the time of c1X is transferred to c2. Since this presupposes that the time of c1X is defined, (f) is a necessary underlying structure of (g). As we have seen, the insertion of be into as (see (h)) separates X from c1, thus making it possible for c1 to tentatively transfer its time to c2 (as). This hypothesis is tested in later operations (see Figs. 7, 8, and 9), the final outcome of which is "She calls John". The underlying structure here is:

Fig. 13

c1	call s	John
ing	c2X	

4.3 In the case of ordinary names, the utterance of a name cannot be immediately accepted because of the built in appeal. Therefore, the externalization of c1X, represented by "John" in (d), must be invented. In English, this invention is manifested in appear. In the case of proper names, c2 and Y are identical in John representing 'name of X', while with an ordinary name, c2 and Y are separated. Similarly, with proper names, c1 and c1X are not properly separated (see (f)), whereas such a separation is necessary in the case of ordinary names. It is appear that accomplishes these separations:

(i)a X appears to (be) Y.
c1 c1X c2

Just as was the case with (d), the insertion of c1 is necessary to call forth the external ending s, which corresponds to c2 here. Moreover, in the case of ordinary names, c1X (appear) must also be internalized in order to allow measurement of time. Prior to (i)a, appear was external,

thus externalizing call in "call X" (see Fig. 4). Comparing Fig. 12b with (i), we find that it is indeed the task of appear to make it possible for c1X to find a time definition, a necessary first step toward the final goal, where c2 acquires the time of c1.

4.4 The following exemplifies Fig. 12b:

(j) "In downhill skiing you've got to...(a brief pause) I call it gut it out." (An interview of Ken Read on Swedish TV)

Changing this into "She does something that she calls 'gut it out'", we can see how a verb is produced by tracing the process in which that sentence becomes "She guts it out".

4.5 The first step is:

(k) She appears to gut it out.

Underlying this is "I call call X call Y", where c1X is a merger of the woman's and the speaker's perceptions. Through this merger, the speaker can test c1X. This test is formally marked in English by appear having a characteristic but-sequel, as in:

(l) Your arguments appear to be most convincing, but the evidence might bear some other interpretation. (Dorothy Parker)

Another important point is that the "infinitive mark" to indicates hypothetical time extension for c2 moving to Y or be. Cf. "She is calling John", where this time is manifested in -ing. But after appear signifies a careful scrutiny of c1 in order that the time of c1 may be fully spatialized, c1 thus becoming pure time. When this is achieved, an inversion takes place. Just like call, appear paves the way for such an inversion by exerting a pull on c2, causing it to move to the left instead of to (be) Y:

Fig. 14

c2	c1	c1X Y
i	i	e

Y is an internal constituent of the external constellation "c1X Y". A double inversion is required to externalize Y again:

Fig. 15

be	ING	c1X	Y	as	she	call	X
c1	c2		i	c2		c1	
SEE			e				

SEE marks reinternalization of s (c)1, and ING marks reexternalization of -ing covering c1X or c1c1X (see below). C1X is inserted into as, marking a hypothetical time transfer from c1 to c2 (cf. (h)). X is externalized as the object of call (c1). This is accompanied by another inversion in which be is inserted in order to externalize c2 in ING in accordance with principle (a), leading to the following configuration:

Fig. 16

(I) be	call(ING)	Y	as	(she)	call	s	X ← Y
c1	c2	i	c2	c2	ING	c1X	
SEE		e					

ING is inserted into as, whereby "call X" (c1X) in Fig. 14 coalesces in the ending s. This provokes a new call, representing the time of c2. This new call, covering ING, causes a selected reinstated Y to move to a new X, representing 'name of X'. ING guarantees that call covers the time stretch between X and X precisely. There prevails "perfective" co-time (see Bäcklund 1986 a). Now the operations portrayed in Fig. 8 yield:

Fig. 17

as	(she)	call	(s)	X ← Y
c2			c1X	s2 Y
c1X				

One of the most important features of these operations is the fact that Y moves "to the left", being represented by X2. This is due to the fact that c1 replaces c2 as the element underlying as, confirming that c2 has appropriated the time of c1. This creates the objectivity that is required by what Guillaume calls "internal incidence" (see below). As we will see below, in "external incidence", representing a subjective proposition, X2 moves "to the right", being represented by Y, yielding the construction "X is Y".

In "internal incidence", Y is internalized before getting independent time:

Fig. 18

(I) SEE	c1X	Y call	s2X
		i ING	s

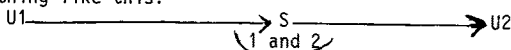
In the final inversion SEE is inserted into as, replacing c1 and reexternalizing X, which moves to the right to become the object of c2. Then, Y too can be reexternalized by adopting the time extension of ING, moving to c2X. This yields:

(m) (I) SEE she guts it out.

It is very important to note that SEE remains as a superimposed control.

5 The above is a description of what Guillaume calls "the constructive mechanism of language", as it applies to English:

Human language has an anthropogenetic aspect. It tells the human mind the point it has reached in its natural course within itself. In order for the mind to be operative, the idea of the infinite deprived of exteriority is overlaid with the idea of a finitude having exteriority. This is always done by the same mechanism: the infinite is conceived of as a potential for mental construction (call X) that encounters a center of inversion within itself. On both sides, right and left, of the center of inversion, the infinite is a going beyond, an exteriority. The whole constructive mechanics of language is the movement of thought - the interiority of the mind's movement - encountering a center of inversion within itself. (See Fig. 4). In a diagram, it may be represented as something like this:



Let us take a closer look. A universalizing movement of the type $U1 \rightarrow U2$ (interiority alone with no exteriority) is unthinkable. Exteriority must be reinstated, by inserting interiority so that there may be contrast between an infinitely containing exteriority and an infinitely contained interiority... In other words, to safeguard its own potential the mind revokes the condition of unthinkableability $U1 \rightarrow U2$, having found the necessary mechanism to do so. This revoking leads to $U1 \rightarrow s \rightarrow U2$.

Here s is minimized interiority, and $\overline{U}S$ and $S\overline{U}$ are maximized exteriorities, which are both exterior to the center of inversion. (Guillaume 162-63; my comments in brackets and my underlinings)

5.1 In Guillaume's theory man creates a universe within himself (U2) in order to control the external universe (U1). This appropriation cannot be described as an unbroken line. By means of call, representing the "interiority of the mind's movement", man creates a "finitude with exteriority":

Fig. 19	x	
X1	call	X2
1	and	2

Cf. Fig. 4. X1 stands for the unprocessed X in the external universe, while X2 represents the "new" X in Fig. 16, representing 'name of X'. x is the center of inversion inside call. Both Xs are out of reach for call, call being undefined in time. x, the center of inversion, causes an inversion, in which X is inserted in order that its exteriority might be reinstated. Appear is used to define the time of call, presenting the following picture:

Fig. 20	SEE	appear	s	to Y	as	Y	U S
	U	U	S	U	U	S	c2X
	c1	c1	X	c2		c1X	

Thus, UUSUS to the left of as becomes USUS, including as, i.e. the cen-

ter of inversion erases the U that is not to become SEE so that the final solution might be presented. This is done in the following way. C1, both the c1 that is erased later, henceforth called c1a, and the c1 that is to become SEE, henceforth called c1, is inserted in order to reinstate the exteriority of Y. First, c1a, together with its object X2, is inserted. What is reinstated thereby is the exteriority of X1, deriving from the first phase of the act of language, "call (c1) X" (see Fig. 4 and Fig. 17). Then, X1 (c1X1) is inserted into as, exteriorizing Y (see Fig. 15). In this operation X2 is deleted. The insertion of SEE into as, through which c1a is erased, is necessary to reinstate the exteriority of X. The "maximized exteriorities" referred to by Guillaume are U (c2) to S (Y) ((appear) s to Y) and S (Y) U (ING). These are both "exterior to the center of inversion", which Guillaume calls "minimized interiority". But the X in this "minimized interiority", so called because X is X1, must be exteriorized again to make Y "grammatical", i.e. to exteriorized Y in time. This yields (m). We note in particular two things. We are operating with two different c1 and Xs, c1 and c1a versus X1 and X2, and, second, in the final product, c1a and X2 (identical with appear) are deleted.

We will see the necessary inversion clearly if we consider Fig. 2 again. In the final product, X and Y have swapped places, and s1 is represented by SEE. We can illustrate this in a figure, representing the transition from "X appears to Y" to "SEE Y c2X (=s)" (see (m)):

Fig. 21

U U S U S → U S U S

6 Using Guillaume's terminology, what I have described above is the "whole mechanics of language", i.e. a mechanism that is truly universal in that it explains any linguistic phenomenon in any language.

What it boils down to as far as English is concerned is the following formula:

Fig. 22

I	I1		
I am calling	(be)	(call)	Y ± as
a c1 c1 ING	c1	c1	
b c2 c2 ing	c2	c2	
c c1 c1X1	e	i	
	ing		
d c2 c1c1X1			
	i n g		

With as, call I1 is always c2, and the goal is for c2 and Y to be externalized together with X1, contained in as. Without as, call I1 is always c1, manifested as be, call, say, or see. C1 and Y are doomed to remain internal, i.e. they are moved to the position of call I (c1). X is externalized, together with c1 and c1a, as extended time, contained in -ing. X is here X1, while it is X2 in appear (c1aX2). With as, -ING attached to c1 (SEE) is pure spatialized time, whereas -ing attached to c2 is partially spatialized time, causing what Guillaume calls "external incidence". Without as, -ing is only partially spatialized, covering c1X (with Y alone interiorized) or c1c1X (with call/be/say/see interiorized together with Y). 6.1 As noted above, the goal of the act of language is for c2 to acquire the time of c1, whereby Y can be externalized in time. Thus, we have the following progression:

Fig. 23 c1a X/Y c1 X/Y c2 X/Y

My analysis above is based on a careful study of a large number of examples (altogether approximately 3,000) with seem/appear, as-clauses, the progressive and phenomena from related fields. The limited space here forces me to focus on a mere minimum of this material. Consider first example (1) (at the end of the paper). In "secondary" uses, as in a response to a question, in sentences like "I see what you mean" and "I see him as my friend" (*can), can is more rare, or even impossible,

than in "primary" uses of sensory verbs. Can here represents X:
Fig. 24

c1a	X	Y
see	can	e

Y is external (a point), whereas the internal c1a and can have time extension. It follows that this configuration represents the selection of an X as the object of call (see Fig. 4). This corresponds exactly with Johannesson's observation: [can will be used] "if the factual circumstances which make it possible for a 'sensation event' to take place are sufficiently remarkable to merit some attention". (1976:47).

In the "secondary" use of see, c1aX is embedded in c1 Y as a punctual interruption:
Fig. 25

c1 $\xrightarrow{\text{c1aX}}$ Y

This represents an insertion of interiority (c1) calling forth the reinstatement of an exteriority (Y), which implies that X is analyzed more carefully.

Then consider (2). Here, the time of c1c1aX1 is embedded in the time stretch from the internal be to the external be (stands for c2):

Fig. 26

be	c1	c1aX	Y	be	
c2	see	ing	Y	c2	I am calling be see Y (Fig. 20 d)
	i	n	g		

$\xrightarrow{\hspace{10em}}$

6.2 Fig. 26 is an example of "internal incidence" in that c1 appropriates the time of c2 "from within" by being embedded in a more extensive -ing. Adjectives are produced through "external incidence": "when we use the adjective beautiful, we apply its meaning not to something in the idea of beautiful, but something outside it which beautiful by itself cannot designate." (Guillaume 121). Substantives, on the other hand, are produced through "internal incidence": "As a substantive, man can be said only of beings belonging to the collectivity subsumed by this word." (Ibid). In my analysis, "external incidence" means that it has not yet been established that c2 has acquired the time of c1, whereas "internal incidence" implies that such an acquisition is an established fact. However, this rule applies only in the presence of as, which is necessary to externalize Y. Fig. 23 is "internal incidence" in the absence of as, i.e. Y is internal. In example (2), this is evident in the fact that an "external" person is telling the perceiver how to interpret Y ("That is 'see Y'"). See as well as Y are left internal, giving the perceiver a chance of verifying the information. Other examples of such "internal incidence" are (3) and (4). Among other things, this accounts for why (4) can be "intentional" ("He is being clever" (on purpose)/Elvis Presley (impersonation) in that an "outsider" may be deliberately informing the perceiver/speaker how to interpret X. Likewise, in (4), an appeal is being directed to the Agent of "say 'X' (direct speech)", who is supposed to confirm or reject the hypothesis. The same is the case with (5). We note that the underlying structure (f) "be calling be Y" yields "She is calling John", in the case of proper names, without as, while in the presence of as, it ultimately produces "She calls John". Here, as we saw in Figs. 7 through 10, "internal incidence" does not apply until as merges two different persons' c1X. Only then does c1 appropriate the time of c1X for one and the same person, and "She calls Y" can be formed. Thus, here "internal incidence" presupposes as, while no such requirement is valid for ordinary names. The reason for this is the built-in appeal in ordinary names.

6.3.(6) and (7), important clues in my investigation, exemplify "internal incidence" with as present. As we see, (7), constitutes a late stage in the production of verbs, whereas (6) illustrates the production of adverbs, "curtseyed awkwardly". Example (6) proves that the configuration in Fig. 23 is indeed the underlying structure of (2). Also, it is proof that the externalization of Y in the ultimate solution presupposes the externalization of c2 in time (see principle(a)). It also shows that it is the task of as to substantiate the time of c2 by provoking -ING (cf. "X appears to Y", where the time of c2 moving to Y is merely hypothetical).

(6) and (7) can be portrayed graphically like this:

Fig. 27 a c1 c2X2 (appear) c2 (s) to Y

"X appears to Y"

b c2 c1 c2X2 (appear) Y

The inversion in Fig. 14

c be c2 (seem) ING to Y as call X2

Ex.6

call s c2 c1a

d call Y as ING c1aX2

X2 ← Y + the operations in
Fig. 16 yielding
"SEE she Y s"
c2X2

SEE

Fig. 28 a c2 c1 (recalled) c2X2 (appear) c2 (ed) Y as curtseyed Ex. 7

b be call ING call Y as call s
c1 (SEE)c2 c2 c2 ING c1aX2 X2 ← Y
(like) ly

c Y call as Y ING
ING c1aX2

They curtseyed awkwardly

We note the following. First, Y is externalized in time only when it has been established that c2 has appropriated the time of c1a (Fig. 27 d and 28 c). Second, the configuration of appear, as it occurs in "surface" speech, is actually c2X2. Third, c2X2 (appear) is inserted into as, forming as, in order to make sure that c2 appropriates the time of c1a. This is accomplished by restoring c1 and X1 in the raised shape of X2, which is externalized. Fourth, X2 in Fig. 27 is deleted, whereas in Fig. 26, X2 is restored as curtsey i.e. the verb curtseyed is being reanalyzed in order to confirm that the attachment of the conjugational ending -ed is justified, thus confirming the "grammaticalness" of the verb. Example (7) (Fig. 28) constitutes the rare case where the verb in the as-clause has its "full" status, SEE (c1) Y, c2X2. Normally, the verb in the as-clause has a "primitive" structure, c1 c1aX1 (like calls in "She calls him/it John/clever"), deriving directly from the insertion of appear into as, i.e. the externalized X2 can now be formulated as a "primitive" verb. Hence, appear indicates that the scrutiny of a "primitive" verb constitutes a stage in every act of language leading to an externalized Y. In example (7), the justification of the conjugational ending ed for curtsey is tested in order to call forth the suffix -ly for the created Y to the left of as. The adverbial suffix -ly marks the transition from 'likeness' (call-ING) to 'identity'.

As can be seen, the configuration of appear has been altered now. This is the result of a careful analysis of (7). First, we note that recall is very common in sentences like (8), which means that recall has the same underlying structure as say, c1c1aX1, also shared by sensory verbs, like see, hear, feel etc. However, if we replace recall by say in (7), we notice two main differences. First, an as-clause is optional in (9) but obligatory in (7). (this has been preliminarily tested on informants). Second, recalled avoids cooccurrence with that, choosing how or -ing instead, as in (10). Another clue is the fact that the object of recall is often a nominalized proposition, as in (11), whereas say requires an entire clause as its object.

There is a great deal of evidence indicating that the word that (both as a pronoun and a conjunction) refers to "see X" (c1aX1). Thus, that is obligatory in (12), where the "evidence" is new information, while it is optional in (13), where the "evidence" is old information, functioning as the head of a new proposition. That after the verb said simply repeats the c1aX1 contained in said,

implying "I know (that) he said it because I heard it". Since recall refers to a mental event that cannot be observed, that is avoided. Now, as we recall, the as-clause tries to substantiate the time of c2. This implies that recall in (7) changes its underlying structure. This is due to the fact that appear manifests a hypothesis as to whether X holds up to an examination as to whether Y is an appropriate candidate as a name. Accordingly, (the name) is embedded in "seeing Y" in:

Fig. 29

recalled seeing(the name of) Y
 ↓c1 c1X c1 c1aX1↓
 c2 c2X2

The deletion of "the name" alters the configuration of -ing, representing the creation of appear. The stem see represents -ed in recalled, causing deletion of X1 and a raising of c1a to c1. This brings with it a similar raising of c1 to c2, yielding the structure in Fig. 29. Now, as is necessary to bring about the inversion resulting in the structure in Fig. 28 b.

A corollary of this analysis is that that cannot occur after "I say", since no reference is made to an observable earlier utterance. Thus, Ljung's example (14) is "ungrammatical". Bolinger (66) confirms this: "This fact I believe has some importance for the theory of performatives. Underlying a sentence like He was at home is some such embedding as I declare that he was at home. If my analysis is correct, there should be no that; the speaker is bringing out a fact that is not tied to any underlying question." In fact, claiming that that is possible in (14) is tantamount to claiming that call in "I call that unfair" should have the conjugational ending s.

Another circumstance supporting my argumentation is the fact that there is a definite tendency towards the present tense in (15), whereas was is very rare in (14). c1aX1 has external time in (16), and so the judgment is closer to being accepted as the speaker's own.

6.4 As noted, it is the task of as to substantiate the time extension of c2 by means of ING. However, this is merely a step towards the ultimate goal of as, which is to externalize Y. As we see in Fig. 26, representing the formula "be calling be call/be/say/say call Y", the absence of as means that the speaker is abstaining from externalizing Y. The -ing-suffix covers the time of c1aX1, which serves as an external time stretch against which Y is being measured as to co-time. As I have shown in my analysis of the transition from "She calls it 'gut out'" to "She guts it out", a proper externalization of Y presupposes that the speaker assumes the perceptual role of the caller. In (17), such a merger never occurs. Just as be as it were extracts the ending s in seem (s in seems = see below), as in (7) and (21), so be in (17) extracts s(c2) in appears. We get this picture:

Fig. 30

felt	was	appearing	to those	watching
c2	c2	c2X2	c1aX1	c1aX1
1	2		1a	2a

-Ing, it is true, substantiates the time of c2, confirming co-time between 1 and 2. The obvious "perfective" co-time between 1a and 2a forms the basis of this (1a is dependent on 2a: "Y appears in their eyes for as long as I observe their watching"). Hence, c2X2 (appear) transfers its time to c2. Y must remain internal, two different perceptions being involved; co-time is being measured between Y and c2X2. Normally, appear forms an as-clause which is its task, thereby restoring c1aX1 from c2X2, but since there is no unique c1aX1 here, appear is externalized by means of -ing instead of as.

My preliminary survey of examples with as indicates that these sentences represent attempts to raise "primitive" verbs, with the structure c1c1aX1, to their "full" status, with s covering c2X2: example (18), with a sensory verb (heard)

as a superimposed control of a "primitive" verb. The as-clause, whose verb also has "primitive" status, provides the time frame in which c2 tries to give the verb Y its full status by replacing c1 with c2 in the structure underlying the conjugational ending:

Fig. 31

c2 (heard) c1aX1 (hiss), as c1aX2 (trod)

In this way the verb Y is properly externalized in time. In my study of a very comprehensive material of as-clauses, it has become abundantly clear that this is the chief function of as. So, for example, as collocates significantly with say, whose underlying structure is C1C1aX1. As extends c1aX1 in time, just as I have shown above, as a first step towards externalization of Y in time. This is also confirmed by -ing often alternating with as, as in (20). Compare (19). This analysis confirms that as does not collocate with the progressive of call, be, say and see.

The implicit superimposed c2 in sentences with say collocating with as represents the speaker's attempt to make the referred speaker's proposition his own. Hence, as does not cooccur with say in the case of indirect speech, where a premature proposition is launched (see (15)). (In (9), as refers to appeared). The underlying structure of (21) coincides exactly with Fig. 24, except from the fact that it is c2 that transfers its time to itself directly, not via c1aX1, as in Fig. 26:

Fig. 32

be c2 X2 Y be I am calling be call (c2) Y
c2 seem ing
i n g →

The fact that c1aX1 is merely implicit here implies that the perceptual basis is to be found in the context. This is borne out by (21), where the underlined portions form such a basis. Another implication of this fact is that an as-clause is impossible in (21) (cf. example (7)).

6.5 While as is obligatory in (7), it is optional, but very frequent in (22). The reason for the high frequency of this collocation is that as externalizes Y. The reason why it is optional is that the externalization of Y is not founded on a substantiated-time extension of c2:

Fig. 33

a seems Y b seems Y as
c2 be i c2 be e

In a, co-time is measured between c2 and Y, and in b between c2 and as. As we recall, appear is made "grammatical" through the insertion of c1 reinstating the exteriority of c2 (s) and Y. Similarly, seem is made "grammatical" through c2 being inserted, thereby exteriorizing s, representing be. The ending s in seems necessarily represents be (c2), since c2 cannot move to Y unless its time has been substantiated. Hence, it must move to itself, as in Fig. 26, and be must be called in as a proxy for it to do so (see Fig. 26). Now, as is impossible in:

(o) a seems to (be) Y *as b appears to (be) Y *as

(o) a can be illustrated like this:

Fig. 34

c2 → be → (be) Y *as
seem s to

To here marks a reduplication of the time stretch from c2 to be in order to externalize Y, and so as would be superfluous to bring about the externalization of Y (cf. Fig. 33). To marks that seem stands for hedging visà-vis an already completed proposition, either by the speaker himself or by somebody else, "He is absent, it seems". This is obvious from the fact that absent in Fig. 33 a inevitably has a metaphorical implication, 'absent-minded', whereas in (o), it inevitably has a

non-metaphorical sense. Finally, as is ruled out in (o) b, because c2 and Y are externalized prematurely without a secure foundation of substantiated time extension for c2. It will be seen that to in (o) a and b has different functions: in (o) a, it reduplicates a hypothetical time extension, while in (o) b, it anticipates a hypothetical time extension for c2. In (7) (see Fig. 27 c), to marks that the hypothetical time extension of c2 has been tested. That is why as is obligatory to mark "perfective" co-time.

7 I have now accounted for the two types of configuration a in Fig. 22, "I am calling Y as" and "I am calling call Y as", underlying the production of verbs and adverbs. Also, Fig. 24 d has been discussed (see Fig. 26) ("I am calling be call, be, say, see Y - as"). What remains to be accounted for is b and c, i.e. "external incidence" and the "internal incidence" that produces substantives.

7.1 A careful reexamination of proper names will be helpful:

Fig. 35

a be calling be Y (as she calls name ← John) (see Fig. 7)
c1 c1 c1aX1 c1 c2 c1aX1 X2 Y

b be calling be Y as she call X2 ← Y
c2 c2 c1 c2 c2 c1a

The two constructions are similar in so far as it is deemed proper that -ing covering c1 be attached to c2 (as) for interiorization. In both cases the reason for this is that Y is left outside of time as an external element. In the case of a (proper name), this is all that is required for an unequivocal proposition to be formed, "that is John", since Y here is without appeal. We know now that b implies that the "primitive" verb that is contained in X2 in c2X2 (appear) is prevented being realized in a form, since there is no need for such a verb to be analyzed. The reason for the absence of such a need is that the speaker feels justified to come forth with a subjective judgment that need not be based on fully spatialized time. Put somewhat differently, "perfective" co-time between c2 and Y is accepted without verification that Y is equivalent with X2 (see below). As we also know, the insertion of -ing into the as-clause leaves be an internal element that is ready to assume time extension:

Fig. 36

call he be Y as call X2 → Y
c2 ing

"He be" to the left of as acquires independent time extension, and then the entire configuration "see (c2) he is Y" is lifted over to the right, see merging with as, deleting as and call (ing), and he merging with X2. Thus, the time of the created Y to the left of as is moved over externally to the reinstated Y to the right of as.

We note that this implies a modification of the analysis of the construction in Fig. 5: "(as) calls" covers only c1a → X1, not c1 → c1aX1, i.e. as investigates the conjugational ending of calls in "She calls his name/him John". This ties in with the analysis of Fig. 20 a: as investigates the conjugational ending of walked (ex. (6)) in order to see if it can be raised from c1aX1 to c2X2, so that the created Y, ignore, can acquire a proper conjugational suffix. Also, in (7). a "full" inflexion, c2X2, is reanalyzed, in order that the created adjective awkward might acquire the ending -ly, indicating identification with -ed. 7.2 Fig. 34 illustrates "external incidence" with as playing a decisive role. Let us now examine this without as. Be is necessary to externalize c1aX1 in time, as we saw in (f). -ing marks this externalization. The price for this is that Y is kept internal. With proper names, this is solved simply by be forming an as-clause, since neither be nor Y needs time extension. With ordinary names, c2X2 (appear) forms as, which ultimately causes be to assume the role of Y, adopting time. Without as, however, -ing prevents be getting time extension, leaving Y internal. We will return to this below.

9 The aim of this paper is to prove the validity of the above model by showing that every one of the examples of way and manner in my material can be accounted for by it.

9.1 First, let us look at a survey of the constructions discussed above in terms of the concepts "incidence" and interpretativeness. Of course, the very essence of language is interpretation, but an act of language can be either explicitly or implicitly interpretative, as I have already hinted at.

Fig. 39

- i inc = "internal incidence"; e inc = "external incidence"; i int = implicitly interpretative; e int = explicitly interpretative
- 1 Yly
Ys
a Y Y/be acquires the time of c2, becoming independent. c1Y = c2X
i inc i int
 - 2 be Ying.Y comes forth to acquire the time of c1, which is embedded in its own time. (See Fig. 35). c1Y = c1aX
e inc e int
 - 3 be being Y. Y automatically acquires the time of c1, which is embedded in the time of c2. (See Fig. 24). c1Y = c1aX
i inc i int
 - 4 He is Y. (He) be comes forth to acquire the time of c1, which is embedded in the time of c2. (See Fig. 34). c2Y. X1 is absent.
e inc i int

Now, we will bring in way and manner for comparison. First, we will identify their tasks:

- (s) a c1 Y c1aX1 (Verb with a "primitive" status). Way analyzes the conjugational ending to shape or comment on Y, or, alternatively, to give Y an additional name in the form of an adjective.
b c1 (SEE) Y c2X2 (Verb with "full" status). Manner analyzes the conjugational ending in order to specify X2 or to supply Y with an additional name in the form of an adjective.

Next, we analyze them as we analyzed the constructions in Fig. 39:

Fig. 40

- 1 I love the way you dance.

c1 Y X1 ← c1a Y acquires the time of c1, which acquires the time of c1a. c1Y = c1aX

e inc e int

- 2 You dance in a lovely way.

c2 Y c1a c1 X1 ← c1a An additional Y acquires the time of c2, which acquires the time of c1a. c1aY = c2X

e ince e int

- 3 He acts in an awkward manner.

c1 Y c2 c2 X2 ← c2 Y acquires the time of c2 moving to X2. c1Y = c2X2

e inc i int

- 4 He acts in a bull-like manner/
in the manner of a bull.

c2 c1 Y c2 c2 X2 ← c2 Y acquires the time of c2 moving to X2. c1Y = c2X2

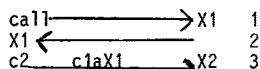
e inc e int

9.2 The following principle underlies all constructions:

(s)aExteriority is created through the insertion of interiority. Through the insertion of a new interiority, the time of the created exteriority is transferred to a reinstated exteriority.

This principle has its most fundamental application in "call X" (c1aX1), where the selected X1 stands for created exteriority:

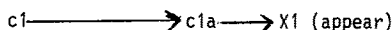
Fig. 41



Arrow 1 represents creation of exteriority, arrow 2 stands for a new insertion of interiority, and arrow 3 represents a transfer of the time of created exteriority to reinstated exteriority. As noted already, it is only c1a that allows objective time measurement. Hence, the time of X- is necessarily c1a → X1. Reinstatement of X1 results in X2, representing 'name of X1', i.e. a raising occurs. Since the time of the created exteriority is c1a → X1, the new insertion must also be raised, calling forth c2. C1a → X1 is contained in c2 → X2, and a definition of c2 → X2 presupposes a definition of c1a → X1.

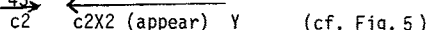
Now, as we have seen, appear represents in English created exteriority in time:

Fig.42



Through the insertion of a new interiority, raising occurs to c2X2, and by means of this time extension the created exteriority transfers its time to the reinstated exteriority, c2 → Y, i.e. neither the created nor the reinstated exteriority is punctual here. Since the time c1 → c2 cannot be measured, the transfer of time is bound to be merely hypothetical, marked by to. To test this hypothesis another inversion takes place, in which c2 is moved to be superimposed on c1. Now, c2 attracts Y to itself:

Fig. 43



(cf. Fig. 5)

To solve the conflict, c2X2 forms an as-clause, inserting itself into it:

Fig.43a



The as- clause recreates the situation in Fig.41; only, here, c1a moves alone to X2, implying that its time can be properly measured. Such measurement occurs through the externalization of the time of c2, and so, the insertion of c1 and be to a position in front of c2, manifesting c2 as ING, must accompany the insertion of appear into as, yielding:

Fig. 44

be calling Y as call X2

c2 c1a

Then, through the insertion of ING into the as-clause, c1a gets punctual, coalescing with X2 in (call)s. Through the operations illustrated in Fig. 16, we get:

Fig. 45

a call (SEE) Y as calls X2 ← Y

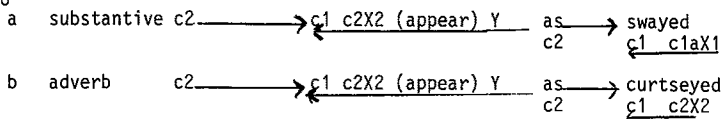
b call Ys as ING Y ← c2
c1X2

The s attached to the Y to the left of as, i.e. created exteriority, has as it were been transferred from calls in a, this transfer arising through the simultaneous presence in as of c2 and X2, before c2 is moved to externalize Y.

Now, the hypothesis of Fig.42 has been confirmed, i.e., it has been shown that the time of c2 can indeed be transferred to Y, and through the final insertion, the time of the created exteriority Y is transferred to the Y representing the reinstated exteriority.

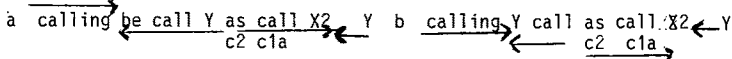
Let me call attention to one particularly important point: through the formulation of the as-clause, X2 in appear is externalized, manifesting a basic "primitive" verb (in example(7): walked). Later on (Fig.45 a), a new Y is called forth by this formulated X2, i.e. X2 represents Y. This analysis applies to the production of verbs. Let us now turn to the production of substantives and adverbs, also contained in Fig. 39 a. We note first of all that recalled occurs in the underlying structure for both substantive and adverb production. Its meaning being 'call back', we might say that the function of recall here is to call back the tense of indirect speech, accomplishing a tense levelling, "I am calling call Y" (adverb), and "I am calling be call Y" (substantive). We get the following pictures :

Fig.46



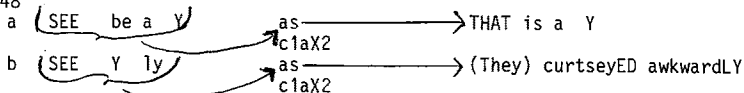
Here, it is c1, i.e.-ed in recalled after raising and projection of X1 into the X2 of appear, that constitutes created exteriority. This is achieved through a double insertion, c2 covered by recall and c2 covered by (appear)ed. The verb in the as-clause in b has a "full" status, whereas the corresponding verb in a is "primitive". Just as is the case in verb production, the "primitive" verb is deleted and replaced by a reinstated Y, while the "full" verb is retained to the end. In the next step harmony is created between the materials on either side of as:

Fig.47



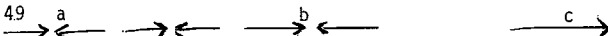
The final insertions yield the surface sentences:

Fig.48



The transfer of time from created exteriority to reinstated exteriority implies objectification, marked in a by SEE becoming THAT and be being reinstated in time, and in b by the adverb assuming its role as modifier of curtseyed. A prerequisite for the final outcome is that the harmony in Fig.46 has been "simplified" as prevailing between two opposing arrows. Thus, we have the following progression:

Fig.49

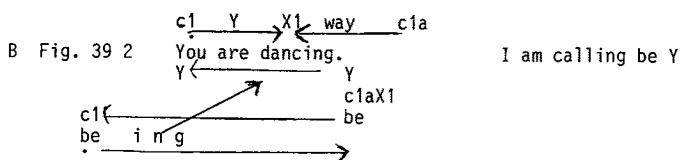


X2 in Fig.46a is deleted when Y reaches its goal, whereas in b it is just replaced by a reinstated verb form curtsey. Thus, in b, curtsey is made to represent itself in an analysis of its conjugational ending, c2X2. Be in Fig.47 a is called forth as an exterior element as a result of the insertion of c2X2 into as. Be acting as a proxy for Y here, serving to keep Y outside of time, thus serves as a means for transferring time from created exteriority to reinstated exteriority.

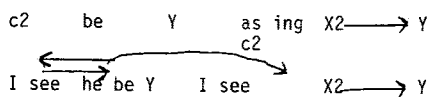
A proper interiorization presupposes that c2 has appropriated the time of c1, which gets its time definition from c1a. As can be seen from Fig.43a a and b, where c1a is embedded in the time $c2 \rightarrow X2$, it is the function of the as-clause to see to it that this condition is satisfied by materializing the time of c1a in ING. Thus, as is obligatory in examples (6) and (7).

9.3 Let us now look at a schematic survey of our constructions.

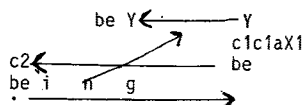
A Fig. 40 1 The way you dance.



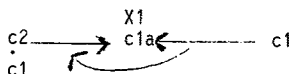
C Fig. 39 4 He is clever. I am calling be Y as...



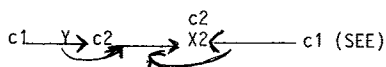
D Fig. 39 3 He is being clever. c2
Are you calling me a liar? etc. I am calling be be/call etc Y



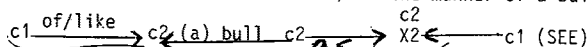
E Fig. 40 2 She dances in a lovely way.



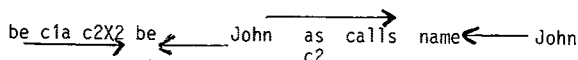
F Fig. 40 3 They curtseyed in an awkward manner.



G Fig. 40 4 She acted in a bull-like manner/ in the manner of a bull



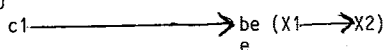
H Proper name She calls John. I am calling be J. as..



Because of limited space, I will limit the discussion of H (proper names) to saying that through the insertion of -ing, Y is reinstated, i.e. it is tested if X2 can represent, i.e. call forth, Y, the real person John. A merger of the two c1s, whereby there occurs an objectification, confirms this hypothesis, yielding the sentence "She calls John".

In the progressive (B and D), there is no reinstatement of Y because c1, instead of being liberated by as, is locked in the -ing-suffix. Hence, there is no objectification, i.e. Y remains internal. The first step is the creation of exteriority:

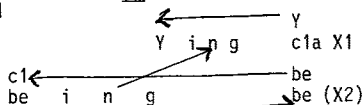
Fig. 50



This is a raised $c1a \rightarrow X1$, i.e. be represents $X1$ and stands for $X1 \rightarrow X2$.

Next, there is a new insertion, through which the exteriority of be is reinstated. At the same time, -ing marks that the time of the created exteriority is transferred to the reinstated be, which now stands for $X2$, calling forth Y:

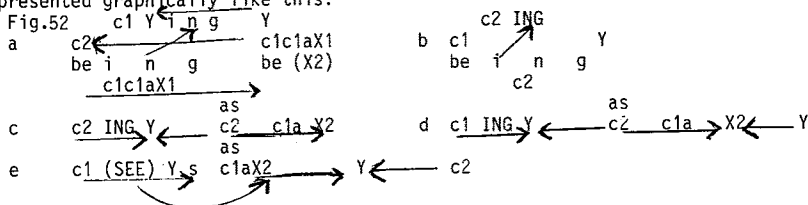
Fig. 51



As we see, Y copies the operations undergone by be, which implies that -ing, which is projected on to Y from below, prevents Y getting independent time extension.

The retention of the external be means that the -ing suffix covers $c1X1$, which in turn implies that it has not been proved that $c1a$ and $c1$ are included in the time stretch $c2 \rightarrow X2$. Since be stands for $X2$, this means that $X2$, the 'name of $X1$ ', cannot represent Y, or rather it means that the speaker is abstaining from testing this representation. Here, the time transfer from created to reinstated exteriority consists of the projection of -ing from below on to Y. This is proved by D, where $c1$, manifested in be, call, say, or see, must be manifested in a form to accompany Y, both representing internal elements, marking that $c1$ is outside of time. This implies that $c2$ itself is outside of time, functioning as a punctual starting-point for the time movement of -ing. Thus, $c1$ is included in the time of created exteriority ("I am calling be call/be etc Y") but excluded from the time of reinstated exteriority ("Are you calling me a liar?"). The former is an underlying structure only, while the latter occurs as an actual sentence. The same applies to $c2$ in example (7) (see Fig. 25). This example, where seem represents $c2$, is proof that the analysis portrayed in Fig. 16 is correct. Example (7) also proves that seem indeed represents $c2$, while (seem)s/ed stands for an external be. In (7), be is extracted and internalized, replaced by ING, because there is "perfective" co-time with the as-clause, representing $c2$ $c1a \rightarrow X2$. The above can be represented graphically like this:

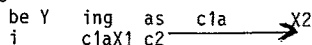
Fig. 52



In d, Y is reinstated as an internal element, being represented by $X2$. In adjective production (C), Y is external, representing $X2$. In e, the time of $c2$ is being incorporated by Y, which implies that the hypothesis of "X appears to Y" is confirmed, and the final insertion of the material to the left of as deletes as, yielding "SEE Ys".

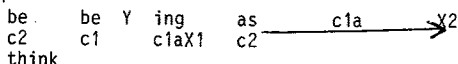
We see that it is the function of the as-clause to restore c1a and reexternalize X2 (from appear). This reexternalization means that a "primitive" basic verb is formulated, and its purpose is for this X2 to represent (in verb, substantive and adverb production) Y or to be represented by Y (in adjective production). Since an external be represents X2, as cannot collocate with an external be occurring in an explicit hypothesis as to the time c1/c2 → X2. This explains why as does not cooccur with "seem/appear to be Y", while it is a preferred collocate of "seems Y", where the -s, representing an external be, is involved in the testing of the hypothesis as to the time c2-(seem) → X2 rather than setting up such a hypothesis. Also, it accounts for the collocational restrictions of (25) and (26). A superimposed element, such as think in (23), is not permitted in (25), whereas it is obligatory in (26). Also, in (26), an as-clause is a rare collocate, whereas it is obligatory in (26). Without think, or another verb manifesting c2, an as-clause in (26) would be impossible, however. The reason why "we found that..." is ruled out in (26) is that be is internal, which leaves Y equated with c1. Thus, as projects the c1 in Fig. 51 on to Y:

Fig. 53



Conversely, the reason why think in (26) is obligatory is that c2 cannot be projected on to Y, because Y is tied up by be manifesting the internal c1:

Fig. 54



This makes (25) "explicitly interpretative", since c2 (as) explicitly attaches an interpretation to the X2 contained in it. It is true that (26) is "explicitly interpretative" as well, while it normally is implicitly so. This is why think is obligatory to make the interpretation explicit. This also accounts for the fact that the pattern of (25) is only possible where "be being Y" represents a purposive act as in (26), where somebody is impersonating Elvis Presley. My analysis seems intuitively correct in that construction C, e.g. "he is nervous", tends to conjure up a situation where the property in question is displayed, i.e. the subject is visualized as performing an act (Y represents X2). My analysis accounts for the "agentiveness" of the construction "X is Ying" and "X is being Y" (B and D), where -ing covers c1aX1, i.e. an undefined act. It also accounts for the fact that X1, the underlying perception, must be defined in (21) to replace the as-clause, which is ruled out here. This fact reflects the fundamental difference between nouns and verbs: "Accordingly the verb can be defined as a word whose categorization reaches completion in time; the noun, as one whose categorization reaches completion outside of time and, consequently, in space (space here being everything that is not time)." (Guillaume 114). To this we add that the adjectives from which adverbs are formed have a verbal property in that their categorization reaches completion in time, -ly corresponding to the conjugational ending of a verb.

10 In Guillaume's model, language arises as a result of obtained harmony between interiorizing and exteriorizing forces. Such a harmony is never reached in the case of the progressive, where the time of created exteriority as well as the time reinstated exteriority moves "to the right". With way, however (A and E), harmony is reached in that X1 and c1X1 function as "centers of inversion", whereby a movement to the left merges with a movement to the right. As a consequence, Y acquires independent time extension by directly incorporating the time of way, representing created exteriority, just like appear and -ing. However, since this time transfer is a premature solution in that c2 never enters the scene, way is a creative phase

in the act of language. This means that both $c1$ and $c2$ in A and E are active punctual elements for the time specified by way. This is due to the fact that $c1$ and $c2$ are not tied up by be and ing the way they are with the progressive, implying that the new insertion of interiority, Y, can transfer the time extension of way to itself.

By breaking up the internal structure of a "primitive" verb, comparing the time of $c1a \rightarrow X1$ with the time of $c1 \rightarrow X1$, way gives the speaker the opportunity of formulating and adding a comment on a Y while observing $X1$.

The independent status of way is evident in the constructions in (27) and (28). Compare the definiteness of (28) with the indefiniteness of (29). In (29) through (33), a word indicating an attitude is attached to way. Alternatively, an added attitude can be manifested by an adjective, as in (34) through (38). Be can be replaced by an inserted "independent" comment, as in (39), testifying to the "freedom" of $c1$. $X1$ is defined in (38) ("slurp"), just as in (40). In this example, way is inserted as a kind of afterthought. In order to make a comment on $X1$, the speaker "lowers" the structure of a "full" verb, from $c1c2X2$ to $c1c1aX1$. We note that the result is a highly unconventional collocation, loathsome ---like, indicating the creative "freedom" of $c2$. Kind of indicates an active ongoing search for Y. Cf. (41)-(42). See also (39).

The independent status of $c1$ permits a deliberate comparison with another $c1$, as in (43). The choice of Y for a $c1$ can be made more effective by similar comparisons, as in (44) through (47). The presence of $X1$ means that it can be pointed to by means of that, as in (48) through (50). The "freedom" of $c1$ permits drawing certain conclusions ((51) through (53)). Way can indicate a search for $X1$ for an Y under consideration, as in (54). That can refer to the hypothetical realization of a course of action, forming the basis of speculation as to consequences ((55)-(56)). By referring to a direct time transfer from $c1a \rightarrow X1$ to an immediately superimposed $c1$, way can illustrate the selection of $X1$ for lexicalization, the first phase of any act of language, as in (57). Interpret manifests $c1$ here, and we note that $X1$ ("downward stroke") is the affected object of that verb, just like ice in "break the ice", whereas way is the effected object, just as hole in "break a hole in the ice". Created exteriority means objectification of $c1a \rightarrow X1$. Collocates reflect this in (58) through (60).

By its "primitiveness", way symbolizes the hardening of a perception into a lexical form. The collocation "have a way of" illustrates this ((61) through (64)). Note the identification of $X1$ in (64). Likewise, the "primitiveness" of way leads to juxtaposition of several adjectives, indicating the impressionistic nature of the judgment ((65)).

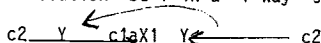
The collocation in a Y way

The inclusion of $c1 \rightarrow c1aX1$ in $c2 \rightarrow c1X1$ means that $c1$ is made punctual just like $c2$. This implies that it is rather the subject that is being characterized while $X1$ is being observed rather than the act itself, as in (66) through (67). This means a possible blockage for verb-adverb collocation, as "contemplated stunnedly". Also, this means that verbs with a "primitive" structure, like say, answer etc., collocate with way but not with manner, as in (68).

The "freedom" of $c2$ can result in the choice of contradictory modifiers for way, as in (69)-(70). In (71), this "freedom" is evident in a redundant added comment. By referring to $c2 \rightarrow c1a/X1$, this collocation represents an attempt at "raising" that is not entirely successful. This is evident in the collocation "in a way", as in (72) through (74). The futility of such an attempt is reflected in collocation with a possessive pronoun ((75)).

The common collocation "be Y in a Y way" should be interpreted like this:

Fig. 55

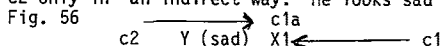


We note two things. First, way restores $X1$, which is absent in " X be Y " (C), giving to the secondary Y a concrete perceptual flavor. Second, the concreteness of that Y is underscored by the fact that it is given independent time extension, contrary to

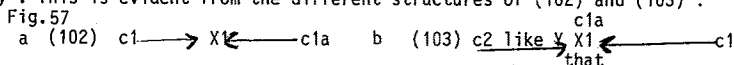
what is the case with the primary Y, where *be* is carried in time. See (76)-(78). The "freedom" of *c2* can be manifested in the superimposition on a "primitive" observation of a more comprehensive and abstract judgment, as in (79)-(82). The liberated *c2* is manifested in *impressed me* as in (83). We feel intuitively that *lovely* is more descriptive in (84) than in (85), where, as we know, the adjective is the Y to which *be* runs in time from *c1* to *X1*, i.e. the Y itself is punctual and static, expressing the attitude of the observer. In (84), on the other hand, the adjective Y as it were compensates for the loss of time of the "primitive" verb by acquiring its own time. Thus, *lovely* has here the descriptive force of a verb. It is actually only *lovely* in (85) that can collocate with *of* and *to*. In Bäcklund 1978, I called the collocation of the type represented in (84) "equation" in that the adjective copies an essential semantic feature of the verb. Cf. also (86), where we have "equation" (*virtuous* is an inherent feature of *c1a* → *X1* here). We see now the reason for "equation": the chosen adjective is a redundant formulation of the selected *c1a* → *X1*, arising from a raised *c2* moving to *X1*.

The raised *c2* moving to *X1* is the mirror image of the movement in the opposite direction, as is explicitly expressed in (86)a. The rationale of breaking up the internal structure of a "primitive" verb is to raise it to the status of a "full" verb. This is illustrated in (87). A collocation like "a way was found for him to deny" would be a crude reference to fraudulent behavior.

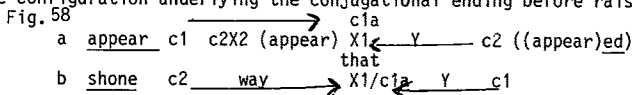
This anticipatory function of *way*, paving the way for a proper interiorization, is evident in collocations with *be*, where *way* is a substitute for Y. This collocation is used in "cleft" sentences, as (88), where *that* points to *c1a* → *X1*. A prepositional phrase indicating a concrete situation makes (89) grammatical. Also, just as in (87), it occurs with *be* that is not yet placed in time, as in (91) through (94). Every detail in (95) marks the presence of *X1*. As we know, *X1* is absent in "X is Y". We also know that the time of *c1* is attached to *c2* in the underlying structure of that construction, *c2ingX2* → Y. The verb *see* collocates with *way*, either controlling *way*, as in (96) - (97), or controlled by *it*, as in (98)-(99). In the former case, the perception releases a certain reaction, while in the latter case, the perceiver's activity is objectified in exteriorized language (any word is a picture of *X1* / see (99)). This difference is illustrated in (100) and (101). In (101), language has broken free of its dependence on control. But, as we know, this liberation is merely superficial: any act of language is subjected to human control. The verb *look* + *adj.* illustrates the objectification of language strikingly. Its underlying structure being *c1.Y.c1aX1*, it offers an exact parallel with *see*. Since *look* presupposes that an adjective Y has been selected, *look* + *adj.* would correspond to "I am seeing 'sad'". However, an act of language implies that the speaker assumes the responsibility for the judgment he is expressing, which is not always the case with "be seeing", as example (2) shows. This means that *look* + *adj.* is based on *c2* having time extension, which is not the case with (2), where the -ing suffix gives time to *c2* only in an indirect way. "He looks sad" has this underlying structure:



Thus, with *look*, the adjective has independent time extension, just like "in a Y way". This is evident from the different structures of (102) and (103):



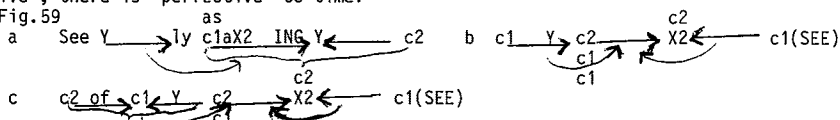
It is obvious that *that* is obligatory in (103) to point at the punctual *c1aX1*, the center of inversion. Now compare (104). *Way that* with *appear* + adjective restores the original structure of *appear* before raising, and with a verb (*shone*), it restores the configuration underlying the conjugational ending before raising occurs to *c2X2*:



We note that the verb in (104) is necessarily metaphorical. We see now the function of the obligatory that in (105) and (106). That points to the lowered conjugational ending of a "full" verb; in (105), the internal structure of a "full" verb, treat, is pried open in order that the perceptual basis be placed in focus, and in (106), a verb outside of time awaits raising to the status of a "full" verb.

10 Manner breaks up the internal structure of a "full" verb in order to call attention to the perceptual basis of the conjugational ending or to supply that basis with a new name ("in a Y manner"). Manner materializes the time $c2 \rightarrow X2$, just as appear does, with this aim in view. F and G (Fig. 40 (b) and (d)) represent two different methods of reaching the goal. In F, which is "implicitly interpretative", there is "imperfective" co-time, whereas in G, which is "explicitly interpretative", there is "perfective" co-time:

Fig. 59



In a, which is the structure of example (6) before the final inversion, there is "perfective" co-time guaranteeing that the reinstated exteriority gets its time from the created exteriority. In b, representing "in a Y manner", no such guarantee can be delivered since $c1$ is not included in $c2$. This follows from the fact that the basic act and Y are prematurely included in the time $c2 \rightarrow X2$ that is restored by manner. In c, representing "in the manner of Y", it is true that the reinstated exteriority gets guaranteed time from the created exteriority (manner), but since $c1$ is not included in $c2$, there is necessarily a comparison of the created and the reinstated Y, not an identification, as is the case with the constructions in Fig. 39 a. Hence, the element like/of and the basic act can never be erased with manner. See (107) and (108). Other examples of Fig. 59 c are (109) through (111). The element like is of course present in the construction b as well in that the co-time is merely "imperfective". This is materialized in the quotation marks in (112).

Manner in Fig. 59 b sets up a hypothesis as to the time $c2 \rightarrow X2$. This is also true about seem, as we have seen, where the ending s represents an external be, whose source is $X2$. Example (113) confirms my analysis of seem.

The fact that manner materializes the time $c2 \rightarrow X2$, while way materializes the time $c1/c2 \rightarrow X1$ has two important consequences. First, the fact that the reinstated exteriority in the case of way always applies to a raised element, $c1$ visàvis $c1a$ or $c2$ visàvis $c1$, means that $c1/c2$ gets "freedom" to add comments. This "freedom" is lacking in the case of manner, where $c2$ as it were looks back at itself. In retrospect in (113) marks this. Second, the perceptual basis in the case of way is unprocessed, marked by $X1$, whereas it is processed in the case of manner, i.e. only those marks in a perception that are pertinent for the selection of the name Y are in focus. This is marked by the presence of $X2$. Compare (114), where an unprocessed observation forms the basis of this way, with (115) through (118), where this manner refers to selected marks of a perception $X1$ constituting $X2$. This difference is illustrated particularly well in (115), where an unanalyzed measure forms the basis of way, while the detailed analysis of the technique of measure leads to manner.

Another important difference is illustrated by (119). That way expresses an unspecified condition outside of time, corresponding with "if he should/were to...", whereas in a guileless manner expresses a specified condition inside time, "if he acts like this".

As a compensation for the lack of "freedom" for $c2$, $c1$ in Fig. b can be liberated to supply comments, as in (120) and (121). We note that "of Y-ing" in the case of manner refers to the basic verb that is being analyzed, while with way, "of Y-ing" refers to the reinstated Y. Offhand in (122) is a necessary realization of Y, whereas way would prefer merely to point at an unspecified time $c1a \rightarrow X1$, "irritated by

the way he barged in."

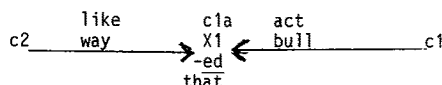
A consequence of the structure of manner is that "empty" verbs, i.e. verbs of a fairly general non-descriptive nature, such as handle, operate, execute, are preferred as collocates. See (123). The corresponding descriptive verb, deal with, on the other hand, prefers way, as in (124). Say and similar verbs referring to utterances collocate only with way. This is natural in view of the fact that an "empty" verb is expected to permit another specifying Y supplied by manner and that a descriptive verb is more likely to stand on its own legs, resting on its internal semantic structure, as in (125), where dealt with is preferred over handled.

Another fact in support of this is that way collocates with verbs that are gradable, as in (126).

This leads to the conclusion that gradable verbs and metaphors (see my analysis of example (104)) have the "primitive" structure $c1 \rightarrow Y \leftarrow c1aX1$. This is further supported by the fact that postposed as-clauses collocate preferably with this "adjectival" type of verbs, as in (18). It is the task of the superimposed heard, representing c2, a pendant of as, to try to give the "primitive" verb "full" status. Interestingly, sound-imitating verbs like hiss, and sound + adjective constitute a large group among the collocates of as.

10.1 Another fact supporting the claim as to two different categories of verbs is the collocation of way with primarily metaphorical verbs as in (127) through (136). The analysis of (136) coincides exactly with "the way that she acts like a bull":

Fig. 60



An interesting point is the fact that way in these examples is the effected rather than the affected object (cf. the discussion of example (57) above). On the surface, the effect consists of course of the purpose of the act being fulfilled, e.g. "to get past the security guards" in (136). But in the underlying structure, the perception of this effect merges with the effect consisting of the transfer of time from $c1a \rightarrow X1$ via $c1 \rightarrow X1$ to $c2 \rightarrow X1$. As we know now, in an entirely successful act of language the effect consists of the transfer of the time of $c1a \rightarrow X1$, the created exteriority (appear), to $c2 \rightarrow X2$, the re-instated exteriority, or rather to Y/be appropriating the time of $c2 \rightarrow X2$. Of course, way, always retaining X1 in the underlying structure, is farther away from reaching this final goal than manner, where X1 has been raised to X2. This is reflected in the following two rewritings of (136):

(t) He acted in the manner of a bull. He acted in a bull-like manner. *Way

(u) He acted in the way of one who acts like a bull.

Compare the following pair of examples:

(v) He acted in the manner of 'one who walks'!

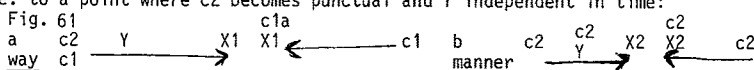
(x) He acted in the way of 'one who acts like 'one who walks'.

It is a commonly known fact that only manner collocates with adjectives with the suffix -like, as "He treated me in a businesslike manner (way)". This is due to the fact that like has time extension, which makes it apt to measured against the time extension of c2. With, way, c1 and c2 are locked outside of time. To fully understand this, we recapitulate the process of a successful act of language: (1) "call X" ($c1aX1$), exteriority is created, (2) the created exteriority acquires time, marked by appear, -ing, and way, through the insertion of a new interiority, c1. e.g. $c1 \xrightarrow{e} \text{appear}$, (3) through a new insertion of interiority,

the time of the created exteriority is hypothetically transferred to the re-instates exteriority, $c2X2 \xrightarrow{e} c2 \rightarrow Y$. Through the insertion of an interior

element, X1 is raised to X2 and c1 to c2. This hypothesis, marked by to, is tested through a series of new inversions, until finally X1, raised to the status of X2, is reinstated as an exterior element together with c2. So, what must be inserted is X1, raised to X2, in order for the raised X to be reinstated as an exterior element. Y copies the behavior of X, the created Y corresponding to X1 (be calling be John), and the reinstated Y corresponding to X2 (She calls John, the real person). The copying is manifested in the backward movements contained in the as-clause, $X2 \leftarrow Y$ and $Y \leftarrow c2$. As is necessary for an internal X2 to be reinstated as an external element.

Now, with way and manner, X1 and X2 are never interiorized before they are reinstated as exterior elements. Hence, c2 cannot transfer its time extension to Y all the way, i.e. to a point where c2 becomes punctual and Y independent in time:



However, way imitates the final solution, because the superimposed element c1 of the included act is of a lower status than c2. This means that c2 is locked outside of time, just as is the case with as (c2) in a proper interiorization. This implies, when the included act is attached to a person ("in the way of one"), that the person is immediately freed from its dependence on the act, getting locked just like c2. The rationale of this is to find the proper object for a comparison, "like a bull". In the case of manner, on the other hand, c2 takes part of the time extension of Y. Consequently, there is no separation between the act and the person linked to that act, typifying it, 'one who walks'. The goal of the act of language is for the actually observed person to be identified with the typifying person, "he is 'one who walks'". However, with manner manifesting the time $c2 \rightarrow X2$, such an identification cannot occur, since X2 has not been properly internalized before being reinstated as an exterior element.

Now, since way embedded in the prepositional phrase "in...", analyzes the conjugational ending of calls in "She calls John", $c2X1$, it cannot actually give time extension to Y. However, way pretends that this is the case in order for c2 and c1 (way without in) to be "free" to add comments on the selected Y. Way is explicit pretense while proper interiorization is implicit pretense.

10.3 Way establishes the effect, i.e. it is interested in motivating the choice of Y, concretizing the motivation in order that it might be commented on. Manner pursues the effect in time in order to see if the selection of another Y is motivated. This is evident from (137) and (138). This is also reflected in the collocation quick way. In Bäcklund 1984 b I argued that quick has an inchoative implication. See (140)-(141).

The above also explains why way seems out of place in (142) and (143). With way, we feel that the descriptiveness is lost. This is due to the fact that it is only manner that treats the verb as an on-going process.

11 Conclusion

The presentation here leads to a view of language that differs radically from the picture presented in the dominating linguistic theories of today. My analysis is holistic in the sense

- 1 that the whole of language is taken into account, the potential (Guillaume's term tongue) as well as the actualization of that potential stored in the mind (Guillaume's term discourse).
- 2 that it recognizes that an act of language presupposes the reconstruction of words before they can be joined together in phrases and sentences.
- 3 that it assumes that the act of language is an exact replica of the way humans perceive and experience the external world.

The main conclusion that can be drawn from my analysis is that language is pretense existing before time (pre-tense) and in the sense 'faking time'. Thus,

the following formula constitutes a definition of language:

(y) Time pretend s to be Y.

-s outside of time gives pretend the sense 'hold forth' (s is held forth to be and Y), which is thus the core meaning of pretend, and inside time, attached to the verb, s gives pretend the sense 'fake', which is the normal meaning of the verb in discourse.

Thus, my analysis argues, just like Pike, against the prevalent view that language is autonomous. Language is subjected to human control, not a self-sufficient autonomon. The inevitable conclusion we must draw from this is that there is in language no such thing as 'event time' (see Hirtle 1967): the event gets its time from 'experience time'. Even Hirtle, who is doing work in the Guillaum-ean vein, seems to regard language as autonomous. Discussing example (17), he says: (81) "the progressive suggests that the impression is gradually forming." As we have seen (Fig.28), -ing defines the time shared by the two c2s, which is limited by the definition of the two c1s proceeding to X1, contained in appear. Thus 'experience time' defines 'event time' in that the expressed judgment must be limited to comprising the time during which X1 is being observed. Once this basic fact is duly recognized, a series of fractious linguistic problems will appear in a new light, as my paper indicates. We can trace the origin of verbal and adverbial inflexions, coinciding with the origin of the indefinite article. We can discover the origin of be, proving Ljung's hunch that be is "transformationally inserted" (64) (Ljung regrets having no evidence supporting his intuition), we get new insights into the progressive and processes of metaphoricalization, and we can observe creative process at work.

11.1 My analysis proves Guillaume's tenet (3) (see § 1.2 and 1.2.3) as to spatialization of time forming the foundation of language: appear, -ing, and way all spatialize the time c1a → X1, and manner spatializes the raised version, c2 → X2. Full spatialization has been achieved when this raised version has been punctualized, giving Y pure independent time extension. Y can be a verb or an adjective awaiting adverbialization. Be in "X is Y" is partially spatialized in that the time of c1, manifested as -ing, is attached to c2 in the underlying structure (c2ing X2 → Y). (Full spatialization means that the time of c2, manifested as ING, is attached to a raised version, SEE, of c1). Treating language as an autonomous phenomenon leads to superficial treatments and unnecessary complications. I will illustrate this by referring to Ljung and Seppänen, who are both heavily influenced by transformational grammar.

11.2 Most conspicuous among the complications I alluded to above is uncalled for polysemic treatments. Thus, Ljung is forced to postulate two verbs seem (54). Similarly, Seppänen argues for two different verbs appear, appear1, roughly equivalent with seem, as in "He appeared to be guilty" and appear2, roughly equivalent with 'become obvious/evident', as in "His guilt appears clearly from the investigation". It is tacitly assumed that appear in the sense 'become visible' is a third variant. My analysis has shown that appear2 simply does not exist. Also, Seppänen freely permits appear to collocate with clearly, which runs counter to actual usage. Adverbialization requires a complex underlying structure for the verb that is to be modified (c2X2), since the ending -ly has the same origin. (Appear)s derives from c2 alone, and therefore, no adverb is permitted.

11.3 Ljung argues that call is part of a "performative preface", the deletion of which yields "X is Y" ("That is unfair" is said to spring directly from "I call that unfair"; 106,108). This means disregarding the fact that c1 (call) must be defined in time, being covered by -ing in the underlying structure, before be can acquire time.

11.4 To account for the progressive of call Ljung is forced to postulate that call is sometimes part of the "propositional content", referring to a "real-world situation", and sometimes outside of the "propositional content", being an "illocutionary verb" (106;153). Thus, Ljung is saying that call sometimes refers to a physical event, being equated with the underlying utterance. This is supposed to account for the progressive of call. According to this analysis, "I call that unfair" is ambiguous. In my treatment, the progressive of call is necessary to indicate failure to exteriorize be(Y) in time, Y being internal and c1 left outside of time (-ing) (see Fig. 39(3)). The goal is to give be independent time extension. "Call XY" is even farther away from that goal, since clax1 is punctual here. This implies that neither "I call that unfair" nor "I say that is unfair" is equated with "That is unfair". To reach that status c1 (call, say) must be covered by -ing in the underlying structure, "call (c2) ing (c1) be Y". That is why call often refers to an interpretation of an utterance rather than referring to a verbal utterance, as in (143), which is equivalent with "I'll be calling you...", implying that a phrase amounting to the same thing as "You are not a leader" will be used. This means that Ljung's rather far-fetched claim that "Mary is saying that she doesn't like Greeks" is ambiguous between referring to an ongoing utterance and being an interpretation of a previous utterance, is wrong (119).

It also means that the verb name can occur in the progressive only without a complement, "I am naming the ship". Ljung's "I am naming this ship Queen Elizabeth" (107) would imply that the speaker is uncertain as to the appropriateness of the name, since the complement in the construction "be calling X Y" is always internal.

This is also the reason why "be calling XY" cannot occur with Y being a verb, as for example "I am calling it 'gut out'". As we have seen, insertion of be and c1, raised to SEE, presupposes a similar insertion of appear (c2X2) into as, leaving Y external, "I am calling Y". This also predicts that name is ruled out as the object of "be calling": "She is calling his name" (OK: John).

11.5 Ljung also finds it necessary to postulate two different verbs look to explain the progressive form, one implying "no particular experience", making the progressive possible, and another implying the presence of an experienter, "I look John sad". I claim (see Fig. 57) that look objectifies c1, i.e. Y takes over the role of c1 in "cl.Y, clax1". But c1 is not lost in the process; it remains as a necessary control. Be (look) ing extends clax1 in time. This explains why informants whom I have consulted prefer collocation with a word indicating time, as in (144).

11.5 Ljung displays his view of language as an autonomous phenomenon most clearly in his contention that such sentences as "I am hot"/ "I am angry" are "pure expressions", implying that there "simply is no 'fact indicated' or proposition." (109). This is a truly reductionist standpoint, amounting to equating language with inarticulate screams or gestures. Even animals can "express" similar sensations. However, since it is not necessary to give an objective motivation for such judgments, I posit the underlying structure "I say I am hot/angry" here, i.e. the time of c1 need not be specified. This goes along with two facts of English grammar. First, be is the only verb having specific forms for the first and second person singular in the present tense. Second, as far as I know at this stage of my research, appear does not occur in the present tense in the first and second persons. This is due to the fact that the available evidence need not be scrutinized.

11.6 I think I can safely claim that my model is made more plausible by the fact that language is seen as an exact parallel of the way human perception is constituted (see § 1.2.1). The obligatory collocation of appearance with visi-

ble and temporal in (146) and (147) actually proves this. Remembering something just seen presupposes that $c1a \rightarrow X1$ is externalized through internalization of $c1$, which is inserted for storage in the mind, constituting the "memory". In the presence of an adequate stimulus, this "image" is "conjured up" (see (146)), i.e. the original perception is recalled, thus becoming an external "picture", in order to make the externalized time stretch $c1a \rightarrow X1$ visible. This accounts for (146). Now, let us address (147). In the use of language, abstract entities, Ys symbolizing Xs , are made temporally seen for the time defined by $c1a \rightarrow X1$ (appear). Thus, the "eternal being" ($c2$) is seen, in the presence of the stimulus $X1$, in the way of $c1a \rightarrow X1$, on condition that "perfective" co-time has been established between $c1(a)$ and $c2$. As is necessary to establish such co-time. Language implies a striving for the highest degree of objectivity. A construction is objective if Y is equated with $c1(a)$ and $c1(a)$ is included in the time of $c2$. Y proceeds in time from $c1$ (SEE) to $c2X2$. $c2X2$ underlies the verbal conjugational ending $-s$, the adverbial suffix $-ly$, and the indefinite article in a process of identification ("That is a Y "). A construction is subjective if be is equated with $c1$ moving to Y (+ as), yielding the sentence "He is Y ", or if be is as if equated with Y moving to be (representing $c1$), yielding the sentence "He is Y -ing". An objective construction represents "internal incidence", whereas a subjective construction stands for "external incidence". As is necessary unless be figures in the underlying structure:

Fig. 62

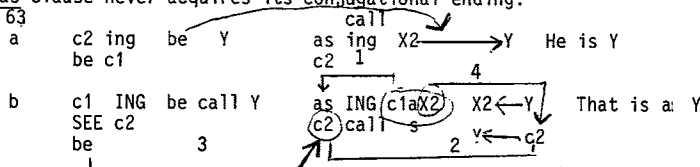
- | | | | |
|---|----------------------------|------|---|
| a | calling Y | + as | He Ys . |
| b | calling call Y | + as | He acts Y -ly. |
| c | calling be call Y + - as | | That is an Y (+ as); He is being Y (- as)
(call, say, see + ing) |
| d | calling be Y + as | | He is Y . |
| e | calling be Y - as | | He is Y -ing. |

a, b, and c represent "internal incidence", while d and e constitute "external incidence". Time is fully spatialized when the time of $c2$, ING, is attached to a raised version of $c1$, SEE (a and b). Time is partially spatialized if the time of $c1$, -ing, is attached to $c2$ (d). In c without as and in e, time is spatialized by -ing representing $c1a \rightarrow X1$. This leaves Y , which is external in all constructions with as (inside time in a, b, and c; outside of time in d), internal, indicating that the speaker is not sure that Y can be seen in the time $c1a \rightarrow X1$.

We see that the time of be in c, + as , is fully spatialized, while it is partially so in d.

The reason for this deficiency is that $X2$ is never externalized, i.e. call in the as -clause never acquires its conjugational ending:

Fig. 63



The difference between Fig. 63b and Fig. 62a and b is that Y in the latter case acquires the time of $c2$.

We conclude that the ending s in "She calls X Y " must be analyzed in order for the time of $c1$ (call) to acquire the time of $c2$ (by means of appear). This results in "internal incidence". If this is not achieved, the result is "extern-

al incidence".

Manner and way represent different stages of this process, way spatializing the time $c1a \rightarrow X1$ and manner spatializing the time $c2 \rightarrow X2$.

What makes example (147) particularly interesting is the fact that it describes the mediate perception of humans, which underlies the creation of language.

This model accounts for the fact that language is in a state of constant development. Just as the image of a certain object, e.g. a tree, is slightly altered in an individual's every perception of such an object, so the meaning of a word is slightly modified in every act of language.

11.7 In most linguistic orientations of today, language is conceived of as being equivalent with the solution of the problem itself. We have seen this in Ljung, who equates "X is Y" with call, without accounting for the fact that in the underlying structure, call ($c1$) attaches its time (through -ing) to $c2$. However, the above model leads to the conclusion that language should rather be defined as the IMAGE of the solution, being equivalent with the raised $c1$, SEE: "The problems here are unavoidable in human thought. To avoid them, one would have to descend beneath the level of human thought. Once homo loquens came to exist as such in historical time these problems became unavoidable. And because it is necessary for him to know about them, he must solve them, and in order to solve them, give himself an image of the solution. This image is language." (Guillaume 165)

12 In all scientific research, one must penetrate beneath the physical appearances to seek invisible "deeper" facts, where normally order is to be found, accounting for physical facts, so often almost confusingly diversified. Linguistics is no exception, of course. However, linguistics has had a tendency to disregard underlying mental facts, focussing merely on physical facts (cf. Hirtle 1985). In this paper, I have shown that all the constructions underlying the production of the essential parts of speech in English are based on the same constructive mechanism. So-called statives derive from the same process. Only, here, the act of language skips the stage represented by "be Y-ing" (verbs) and "be being Y" (adjectives).

In my opinion Guillaume has shown us the way for fruitful linguistic research: "Speakers of a Germanic language possess it, live it, use it, it is almost organic in them, but one could not say that they know it. They are quite unaware of it. The task of the linguist and the grammarian (our task here) is to discover this design, this systematic schema, allowing ourselves to be led by careful observation of the facts - of the world as it appears to the mind - and also, it must be said, by the presupposition that there is order among the facts, an order to be discovered." (Guillaume 46)

Linguists must make due allowance for the creative powers of language that constitutes its hallmark. In order to achieve that, and in order to become a truly humanistic science, linguistics ought to approach the object of its study in a holistic manner.

EXAMPLES

- (1) "Can you hear me?" --- "I hear you" (New York TV)
- (2) "Can you see my films, they're always seeing the fifth draft." (New York TV)
- (3) He is being sarcastic.
- (4) Are you saying that you hate him?
- (5) Are you calling me a liar?
- (6) An eyewitness recalled how awkward the red-turbaned colored women appeared as they curtsied in the church doorway. (8C)
- (7) He was seeming to ignore them as he walked about the store serving his few white customers. (Alex Haley)
- (8) He worked very hard in those days," he recalled.
- (9) He said that they had appeared awkward. (? as)
- (10) He recalled how he had worked / working hard.
- (11) He recalled the accident; he said that there had been a terrible accident.
- (12) The prosecution presented the evidence they had it. (Cited by Bolinger)
- (13) The evidence they had it was overwhelming. (Cited by Bolinger)
- (14) I say that he is wrong.
- (15) He said (that) he was tired of it all.
- (16) He was saying that he is tired of it all.
- (17) I felt that I was appearing an irresponsible commander to those watching me more or less critically. (Cited by Hirtle 1967)
- (18) "I heard the snake hiss as I trod on it. (Herman Wouk)
- (19) "That'll teach the little fuck", said Bill Fargo as he climbed in the truck. (Fred Mustard Stewart)
- (20) "Bill Fargo said, sinking wearily into a chair. (Fred Mustard Stewart)
- (21) The girl went on and, having been begged once more by Mr Harrow to look at the letters, at last opened them and said they were far better than I had expected... As I was signing them and assuming that they were of my sincere appreciation ("But you are seeming too much surprised, Mr Dostland", Fraulein Wasser-mann came in. (Richard Adams).
- (22) The serenity seemed a paradox as he thought about his cousin's problems. (Phillip Root)
- (23) I think he is feeling sorry for himself. (Arthur Hailey)
- (24) Look, the stone is falling!
- (25) It was raining as we walked ashore. (Hammond Innes) ("We found that...")
- (26) I think he is being Elvis Presley as he acts like this.
- (27) We must find a way to solve the problem.
- (28) "I never liked the way the vegetables tend to fall off." (New York TV)
- (29) She emphasized at the way it was happening. (Herman Wouk)
- (30) I was irritated because he repeated every word I said. (Arthur Hailey)
- (31) remember the way he parsed each word and phrase of my bar-mitzva-passage for me. (Herman Wouk)
- (32) A second doubt about the case - a matter of decency as well as constitutional-ity - is the way the Palestinians are being treated. (The New York Times)
- (34) "At all, a helluva way to run an electoral system. (The New York Times)
- (35) A hell of a way for the President to face Brezhnev, stripped to his Jack- straps. (Herman Wouk)
- (36) Well, the way Julia, or Judith, wrote quotations from Vyvyan's writings into a eulogy to make the deceased out a religious man was truly stylish. (Her-mann Wouk)
- (37) The way he performed his duty was impressive indeed. (Irwin Shaw)
- (38) It was sort of pathetic, the way he slobbered on his hands, slurp, slurp. (Herman Wouk)
- (39) The way he said it, believe it or not, miraculously inoffensive. (Herman Wouk)
- (40) He liked children, in a loathsome kind of way; they had to be brought in and put through tricks for his entertainment. (8C)
- (41) He stood up in a grand sort of way. (Suggested by Dwight Bolinger)
- (42) He spoke slowly and hesitantly. He sort of stumbled his way through the words. (The New York Post)
- (43) The way I grew up determined the way I write about my country. (The New York Post)
- (44) Annie already digs into my wife's jewelry box the way I played in my father's chest. (The New York Times)
- (45) He said that he had found that he was not belittled the way he was at home by his father. (Jeffrey Archer)
- (46) Nonmen: among the things he had going for him, George Bush said in 1980, was the big Ms. A victory in Iowa, progress in the poll's magazine covers, cease-less television - much the way Jimmy Carter rocketed out of nowhere in 1976. (The New York Times)
- (47) If Hitler marches into Britain the way he has into Poland and France... (Jeffrey Archer)
- (48) The heat of their argument had already aroused him, as skirmishes with Marge so often did. The first encounter had begun that way. (Arthur Hailey)
- (49) He didn't mean it quite that way." (New York TV)
- (50) He would get used to her first and placate her later. It had not worked out that way. (Raymond)
- (51) Well, Peter Grim has some rock stuff, the way it's arranged. (The New York Post)
- (52) "These people must not have children of their own, the way they treat us," he said. (The New York Post)
- (53) The way Lee tells the story, she's the only member of the family who ever successfully balked at circling the bridegroom seven times. (Herman Wouk)
- (54) Was he a man any longer? He knew he had been before, but now he could not be sure. Had he become perverted totally? Was this a way it had happened? (Arthur Hailey)
- (55) We'll do it quietly, paying off local politicians when we have to; that way we avoid nationalistic issues. (Arthur Hailey)
- (56) I suspect that uncertain about my parenting skills had me secretly hop-ping for a girl. That way, my wife could deal with delicate issues sure to come. (Herman Wouk)
- (57) Old Sammler thinking about his wife in pre-war Bloomsbury interpreted a certain quiet, bosomful way she had of conveying with a downward stroke of the hand, so delicate that you had to know her well to identify it as a vaulting ges-ture: we have the most distinguished intimacy with the finest people in Britain (Sam Bellow)
- (58) The way I live now began to take shape in those talks... as I tried to sort the way it fits Bobby Kebo's tornado passage through my life. (Herman Wouk)
- (59) If perception in politics, Mr. Regan has weakened the Reagan Administration. He has proposed that Congress to take a more confrontational role in foreign policy. (The New York Times)
- (60) Chairman Boven acknowledges that the foreign policy disasters may have start-ed innocently as a gesture toward Iran, but even if so, it quickly degenerated into an arms-for-hostages deal, and then into a way to give money to the Contras. (The New York Times)
- (61) Seductions have a way of working out, and this one of course did. (Herman Wouk)
- (62) Suskowitz had a way of throwing around Aramic terms from the Talmud. (Herman Wouk)
- (63) Well, he... had a way of throwing early on the ground that there was a stone in her hoof

- (99) My picture of her now is enormously different from the way I saw her then. (Herman Mouk)
- (100) The way he acts, I think he is like a bull.
- (101) The way I see it, he is like a bull.
- (102) I like the way you look.
- (103) I like the way that, in the Iran-and-Contras scandal, National Security Council operatives looked like dangerous amateurs, Reagan appeared ignorant and politically naked and Schultz shone. (The New York Post)
- (104) They relished the way that, in the Iran-and-Contras scandal, National Security Council operatives looked like dangerous amateurs, Reagan appeared ignorant and politically naked and Schultz shone. (The New York Post)
- (105) "Why do I treat you the way that I do?" (Title of a jazz tune)
- (106) There was only one way that I could possibly obtain such a huge sum. (Sidney Sheldon)
- (107) He acted in a bull-like manner.
- (108) He acted in the manner of a bull.
- (109) Snarrow-sized Virginia Gibson with sparkling blue eyes and a cheerful smile, made a suitably perky Amy, while Melisande Congdon, as the real aunt, was positively monumental in the very best Gibson manner. (BC)
- (110) This carried over into the more urbanized late 19th and early 20th centuries, when the man ruled the roost in the best bull-roaring life with Father manner. (BC)
- (111) ...they reveal the unconscious motive in seeking each other and in the lassitude make an extraordinary confession of guilt in the twentieth-century manner. (BC)
- (112) That Mr. Stewart's wrists and ankles were bound together in a "hog-tied" position was also "inappropriate and inoffensive." (George Orwell)
- (113) The manner in which his career was haunted by anti-administration partisans on Capitol Hill seems, in retrospect, near-disgraceful - and all too reminiscent of unhappy eras past. (The New York Post)
- (114) In New York everybody is accepted, irrespective of dress or behavior. Big cities are compassionate in this way. (The New York Post)
- (115) Tire size can be determined in several ways, but the one that is the easiest and as accurate as any is by measuring the effective radius of a wheel and a tire assembly. This is done by measuring the distance from the surface on which the tire is resting to the center of the rear axle shaft. A tire must be inflated to its normal operating pressure and the measurement must be in inches. Any fraction of an inch involved in the measurement must be converted to a decimal equivalent to simplify the mathematics. When tire size is measured in this manner, a constant of 168 is used in the formula. (BC)
- (116) To permit the storage of food for long periods of time, a method of preservation must accomplish the destruction of microorganisms and inhibition of enzymatic action. The term "sterilization" applies to methods involving essentially complete destruction of microorganisms. Food treated in this manner... (BC)
- (117) This features the marching songs of several nations, recorded as though the various national bands were marching by your reviewing stand. Complete with crowd effects, interruptions by jet planes, and sundry other products of realism, this disc displays a command of technical detail and a knowledge of all the facts of the matter that is fully deserving of the highest evaluation of this recording program. No reference is made to the possibility of recording other than popular music in this manner, and... (BC)
- (118) "Don't forget, here was a man who had been accusing his colleagues for almost a year of willfully attempting to present an incorrect report. He was not merely alleging errors, but the accusations were carried out in day-after-day allegations in memos, written charges of serious consequence. Supposing you and I were accused in this manner and yet we were doing our level best to carry on our work. (BC)
- (64) He has a way of gesturing for emphasis with his left hand, a cigarette in his right finger, and that becomes my own emphatic gesture. (Herman Mouk)
- (65)...and the Man in the Iron Mask had found the tersest, subtlest, kindest possible way to signal to me what had happened. (Herman Mouk)
- (66) The one-armed interviewer contemplated me in a stunned way. (Irwin Shaw)
- (67) "We are not posing a threat to anyone, and certainly not to those who act in a civilized way." (New York Times)
- (68) He said it in a friendly way. (Arthur Hailey)
- (69) And on yes," Jane Smart said in her hasty yet purposeful way... (John Updike)
- (70) "You can hear him say 'Glop' in that faintly condescending yet affectionate Christ-like way. (Herman Mouk)
- (71) In a muted way I can't spell out, that feeling about Grandma and my feeling about Israel overlap. (Herman Mouk)
- (72) In a way he envied her. (Arthur Hailey)
- (73) Yes, in a way, Miles's willingness to return and face her penitently argued a strength and manhood which Carlos never had. (Arthur Hailey)
- (74) In a way, I'm sorry his wife works for us. (Sidney Sheldon)
- (75) He'd rather die in his own way than let anyone know what he was going through. (Jeffrey Archer)
- (76) She was beautiful in a darkish way. (Herman Mouk)
- (77) They were different from each other, but each one was dazzling in her own way. (Herman Mouk)
- (78) She was prominent in a technically more proficient way. (Irwin Shaw)
- (79) He has heard, in the way I argue about religion with Mom, abrasive echoes of my Columbia education. (Herman Mouk)
- (80) It is quite clear, in the way he speaks about A man and his four sons, that family is important to Kirk. (The New York Post)
- (81) It is all in the way you presented it. (The New York Post)
- (82) But there was something, some echo in the way she spoke... (BC)
- (83) I realized now that she had been showing me, in what impressed me as a very accurate way, something her mother had said to her: it was as if she was siding me. (BC)
- (84) You dance in a lovely way.
- (85) This is a lovely way to dance.
- (86) She was sitting up in a virtuous way. (Arthur Hailey)
- (86)a His attitude was reflected in countless ways around the house. (Arthur Hailey)
- (87) That document, now in the hands of the review board, lays out a way in which Mr. Reagan could possibly deny that he gave approval to the initial Iran arms deal, sources say. (The New York Times)
- (88) That's the way he is. (Irwin Shaw)
- (89) He is that way with the dog. (Leo Bussacaglia)
- (90) It is that way with the dog. (Leo Bussacaglia)
- (91) "Don't be that way!" (Title of a jazz tune)
- (92) I needed to be a certain way. (Irwin Shaw)
- (93) It isn't the way it used to be. (The New York Times)
- (94) He has taught me to be this way. (The New York Post)
- (95) Every detail in the movie is the way it was. (New York Times)
- (96) Seeing the way I took it, she laughed. (Sidney Sheldon)
- (97) She saw the way he couldn't take his eyes off Violet, and she muttered to herself, "Bozote moi, love!" (Fred Mustard Stewart)
- (98) He was a repulsive blubbery hulk, any way you looked at him. (Herman Mouk)

ARE THE MODAL AUXILIARIES PRESENT SUBJUNCTIVES?

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There is no dearth of commentators on the state of the English language to proclaim the demise of the English subjunctive. Fowler described it in 1924 as "moribund except in a few easily specified uses." In 1941 it was characterized by Somerset Maugham in the following terms: "The subjunctive is in its death throes, and the best thing to do is to put it out of its misery as soon as possible."¹ After so many years of agony, one would have expected that by 1987 it would have breathed its last breath. And yet it is still with us today.

Granted, the subjunctive is not the most frequently-used verbal category in present-day English; however, there are still contexts where its occurrence is perfectly natural. Quirk (1972: 76) points out for example that the present subjunctive is still very productive in subordinate clauses when the main clause contains an expression of recommendation, resolution, demand, surprise etc.:

- (1) We ask that the individual citizen watch closely any development in this matter.
- (2) There was a suggestion that Brown be dropped from the team.

According to Charleston, this use of the subjunctive is even on the rise in American English:

It would almost seem as if the subjunctive were gradually coming back into favour among modern writers, especially in subordinate clauses, possibly under the influence of American-English usage.²

In this paper, it will be suggested that the subjunctive has an even greater presence in modern English than is implied by the above observations: it will be argued here that the present subjunctive has found a comfortable niche in the linguistic system of English in the form of what are commonly called the modal auxiliaries.

¹ A writer's note-book, 1941.

² Charleston 1960, quoted by Hirtle 1964: 80.

In order to demonstrate this assertion, we must first have a look at what exactly it is that the subjunctive expresses in English. It has long been recognized that the subjunctive's meaning stands in immediate opposition to that of the indicative: unlike the latter, the subjunctive is incapable of evoking an event as having real existence, a fact which has merited it the appellation "thought-mood," by which it is meant that the subjunctive expresses something as "existing in the speaker's mind only" (Jespersen 1949: 623-624). This characteristic should be put into relation with the subjunctive's indifference to the division of time into past vs. non-past (present and future):

(3a) I suggested that she leave yesterday.

(3b) I suggested that she leave tomorrow.

(4a) She looked as though she were fainting.

(4b) She looks as though she were fainting.

The distinction between the so-called 'past' and 'present' subjunctives has nothing to do then with time-spheres: neither form makes any reference to whether an event is before or after the moment of speech. The past subjunctive -- in spite of its name -- does not situate something in the past; its meaning is rather to present an event as being contrary to fact, i.e. contrary to what is known to be real. This value has been called "irreality" (Zandvoort 1969: 112) and can be observed in the following sentences:

(5) If I were you, I would leave.

(6) I wish it were over.

The present subjunctive, similarly, has nothing at all to do with the present of speech, but rather has two major uses -- 1) an "optative" use, where it expresses the object of a wish, a desire:

(7) The men had said that they must have been delayed, and had suggested that she wait.

(8) An army lieutenant demanded that the flag be lowered.

(9) God save the King!

(Zandvoort 1969: 111-112)

and 2) a "potential" sense, where it expresses something as possible but not real:

(10) Though everyone desert you, I will not.

(11) If two angles of a triangle be equal to one another ...

The contrast between the two forms of the subjunctive, therefore, is not one of situating an event either before or at the moment of speech but rather a distinction between two different ways of looking at an event without situating the latter in real time, i.e. time as experienced by the speaker and defined with respect to his position in it.

A further point which should be made is that these two ways of viewing an event outside of real time are not random; they are in a systematic relation of opposition to one another. The past subjunctive evokes an event as non-real and opposed to reality or to realization; the present subjunctive as non-real but not opposed to reality or realization. Another way of expressing this is to say that the past subjunctive evokes a non-real event as having a negative potential for being or becoming real, whereas the present subjunctive represents a non-real event with a positive potential for being or becoming real. This can be represented in diagram form in the following way:

(-) $\xleftarrow{\text{event seen with negative potential for being or becoming real (PAST SUBJ.)}}$ (+)

(-) $\xrightarrow{\text{event seen with positive potential for being or becoming real (PRESENT SUBJ.)}}$ (+)

(cf Hirtle 1975: 20)

To sum up, then, both forms of the subjunctive evoke an event outside of real time; the difference between them can be defined in terms of whether the speaker represents the event as opposed to reality/realization or not.

If we now compare the meaning of the subjunctive as analyzed above with what the modal auxiliaries express, a striking parallel emerges between the latter and the present subjunctive. First of all, the modals resemble the present subjunctive in that they do not represent an event as really existing at some point or period in time: to say that something may, can, shall, will or must exist is not to say that it actually does. Moreover, a moment's reflection reveals that, like the present subjunctive, may, can, shall, will and must all evoke an event as having a positive potential for being or becoming real: may/can evoke it as possible, shall/will as an object of volition or as probable, must as necessary.

That the modals represent an event as non-real but with a positive orientation towards reality seems beyond doubt in the following contexts:

- (12a) He may come tomorrow.
- (12b) He may be here right now.
- (12c) You may leave the room.

- (13a) He can swim.
 (13b) I can play squash with you tomorrow.
 (13c) You can leave the room.
 (13d) It can get quite cold there in the winter.
- (14a) Students shall pay their fees in full by October 30.
 (14b) In the next chapter we shall discuss pronouns.
- (15a) He will be in London tomorrow.
 (15b) I won't have it!
 (15c) This compound will decompose at 60°C.
- (16a) Non-members must pay an extra charge of \$5.00.
 (16b) He must be ready by now.

Certain other uses of the modals require further comment however to show that they constitute no exception to the analysis proposed above.

The most obvious of these cases is the occurrence of the auxiliary can with the verbs of perception:

- (17) I can see two men. How many can you see?

Here can see is practically the equivalent of see, and the act of visual perception would seem to be represented as real. In spite of these appearances, however, what is actually evoked in such uses is merely the existence of the conditions which make seeing possible, and not the reality of seeing as such. This can be seen by comparing:

- (18a) Can you see what he has written on the board?
 (18b) Do you see what he has written on the board?

The sentence with can necessarily suggests some kind of a difficulty -- probably distance or small writing -- and therefore refers to the conditions necessary for seeing to take place. The sentence with do, on the other hand, presupposes that the conditions for seeing exist and is concerned rather with the content of that which is seen. Can therefore evokes what makes seeing possible on a given occasion, and since seeing is a type of action which takes place automatically if there is nothing making it impossible, this also implies that the seeing is real.

Another use where can apparently represents an event as real is that found in:

- (19) When he was young, he could play the guitar.

Once again, however, closer scrutiny shows that the reality of the event denoted by the infinitive is only implied. What the sentence says refers exclusively to the existence of a potential for this

action. This becomes very clear when one considers sentences with could expressing a past capacity such as:

- (20) Ten years ago, the super-powers could already destroy the earth hundred of times over.

Here the capacity is left unrealized, which shows that even in the past -- the part of time where things are represented as having already had real existence -- the role of could is not to represent the infinitive's event as something situated in real time.

The final problematic use to be dealt with is that in which would expresses a past habit:

- (21) The thing was, he would concoct anecdotes and he'd tell them to me over and over again ...

(Coates 1983:209)

This use of would obviously affirms the actual occurrence of the infinitive event as in the cases just examined. As in (17) and (19) however there is more to this usage than meets the eye. Coates, from whom this example is taken, feels that here would evokes the infinitive event as predictable, and paraphrases (21) above correspondingly as 'his concocting anecdotes and telling them to me became predictable'. We can only agree with her: would denotes merely the probability of these actions occurring, not their reality. The following comparison can serve to illustrate this:

- (22a) He lived in an apartment.
(22b) He would live in an apartment.

While the first sentence asserts the stable existence of the event 'living in an apartment' over some undetermined period of time, the second suggests a disposition of the subject which would only manifest itself on certain occasions ('when he went to New York on business', 'when he got tired of his house'). In other words, would merely evokes a tendency characteristic of the subject -- something which requires certain circumstances to become real -- and not the pure unconditioned reality of an event as in (22a).

To summarize, we have seen that the modals never express the reality/realization of the event denoted by the infinitive with which they are used, but merely its potential for being or becoming real. This potential can be a mere theoretical possibility:

- (23) It may be sunny in Montreal.

a real possibility:

- (24) It can get quite warm in Toronto.

a probability (i.e. something that can be predicted):

(25) It will be sunny in Montreal when we get there.

or a necessity (when the speaker sees no other possibility):

(26) It must be sunny in Montreal.

As shown above, this implies a similarity in meaning between the modals and the present subjunctive, which, as has been seen, also expresses an event as non-real but with a positive potential for being or becoming so. Of course, the subjunctive is much more abstract than the modals, since it does not distinguish the various shades of the potential as the latter do. But the fact remains that there is an undeniable similarity in meaning which we have attempted to bring into clearer focus here.

What is more, the resemblance between the modals and the present subjunctive does not stop here. Besides the relationship just described on the level of the meaning they signify, there is also a similarity on the level of the sign. Both the present subjunctive and the modal auxiliaries drop the -s ending in the third person singular. True, the absence of -s with the modals can be explained historically by the fact that the latter were originally preterites before becoming present tense forms. But even in Old English they were no longer felt to refer to the past, as shown by the fact that they had developed separate past forms for this function. If the modal auxiliaries therefore are not past tense, and they lack the third person singular -s characteristic of the present indicative, then it would seem legitimate to ask: what exactly are they? The answer suggested here is that, due to the special kind of meaning they express, they are conjugated as present subjunctives in their non-past uses.

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STATIVE vs. DYNAMIC: WHAT DO THEY DISTINGUISH?

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The English verb probably enjoys the dubious distinction of having occasioned more confusing and contradictory argument than any other object of grammatical analysis. Much of the confusion and contradiction arises because grammarians have tended to dwell on usage in discourse with all its shifts and variations rather than seek out the constant elements of the verb as they exist before usage in the subconscious system of tongue. The purpose of the present paper is to discuss one such element, namely the grammatical representation of duration - here called **EVENT TIME**.¹ I shall try to show why event time is necessarily found in any verb and to illustrate the different ways in which this element is manifested in the use of the simple form in discourse.

We can best begin by referring to the aim of Vendler's well known treatment (1969) "Verbs and Times". In proper philosophic and scientific fashion, Vendler attempted to get beyond the individual differences exhibited by each and every use of each and every verb in English by describing the "time schemata" involved in different verbs. He concluded that there are four types of verb - **ACCOMPLISHMENTS**, **ACHIEVEMENTS**, **ACTIVITIES** and **STATES**. Of course it might be argued that the list is not complete - that **HABIT**, for example would constitute another type - but the point here is that Vendler is looking for something more general than particular uses: time schemata, that is, abstract representations of time which provide a frame for the individual lexeme, which impose a temporal shape or form on it.

It is this attempt at generalization which is of interest to us here. Indeed, some grammarians have gone one step further by recognizing that Vendler's first three types have something in common: they all have an action-like, developmental quality involving change. States, on the other hand, involve no change or development. And so the number of event types can be reduced to two: **DYNAMIC** or **ACTION-LIKE** and **STATIVE** or **STATE-LIKE**.² Even at this level of generality, however, a certain confusion is found. Some grammarians consider this to be a lexical distinction, others a grammatical distinction. That is, some speak of a particular verb as being inherently dynamic or stative by virtue of its lexeme whereas others maintain that it is a strictly grammatical matter since most any verb lexeme can be found in both

¹ **EVENT** is used here to denote what is common to all verbs, that is, a lexeme grammatically represented as an entity of time. The different types discussed here are therefore all subdivisions of the general notion of 'event'.

² The terms **DYNAMIC** and **STATIVE** aptly designate the expressive effect of each type most commonly observed in usage. **ACTION-LIKE** and **STATE-LIKE** evoke the manner in which the event is represented (= 'represented the way an action/a state is represented') and so bring to mind the grammatical processes involved rather than their effects in discourse. Since it is the job of linguistics, like any other science based on observation, to get beyond directly observable effects to prior causal conditions, the latter terms will be adopted here.

types of event. To determine whether the distinction between action-like and state-like events is lexical or grammatical, it is necessary to push the generalization of observed types one step further to see what is the common element of which these are the two manifestations, to see what they distinguish.

Perhaps the easiest way to bring out what is common to both types and so to all uses of the simple form is to compare two often discussed examples from Vendler:

He ran a mile.

She reached the top at noon sharp.

The difference between these two sentences is clear: whereas running a mile takes an appreciable time to accomplish, reaching the top is so brief that some would call it "instantaneous". One may wish to consider these to be different verb types, to manifest different time schemata, as Vendler does, but our concern here is rather to discern the constant which permits the observed variation. Quite clearly, it is the time involved in the event, its duration, which varies: in the second sentence the duration is minimal, in the first, greater than minimal. A moment's reflection suggests that duration is a necessary component of any event in the sense that for anything to exist in time, its beginning must be beyond its end. Even extremely short happenings, so short that we cannot experience them, must be imagined as occupying a minimal space of time if they are to be represented as events and expressed by means of a verb (cf. Hirtle forthcoming for a discussion of this point). Thus I maintain that any verb, because it expresses an event, necessarily involves a mental representation of duration, of event time.

If this argument is valid, then, a representation of event time is a necessary component of any verb. From this it follows that some manifestation of event time will be discernible in every use of every verb but it does not follow that every form of a verb will represent event time in the same way. For example, there is a clear-cut distinction between the progressive and the simple forms in this respect. Nor does it follow that a given form will always evoke duration in exactly the same way. Thus, in the case of the simple form, action-like and state-like events are different ways of manifesting event time.

This claim can be most easily demonstrated if we begin with the simple form expressing action-like events, as in the two examples above. There we saw that, long or short, the event is evoked from beginning to end. And I would maintain that this view of the full stretch of event time is what characterizes all action-like events in the simple form and is in fact what gives rise to the impression of a "dynamic" event.³ Thus whenever an event in the simple form is felt to be dynamic, action-like, this is the result of the speaker having represented the full length of its event time, of having imagined it from beginning to end.

How about state-like events? How is duration configured here? Consider an example such as:

The air smells of jasmine.

³ Although it has been argued (cf. Vendler 1969) that the simple form expresses an indeterminate event in an example like:

He pushed the cart.

whenever such invented examples are seen as real sentences (i.e. in a real situation), the simple form must be given its "beginning to end" interpretation, as I have shown elsewhere (cf. Hirtle forthcoming).

There is no suggestion of rapidly moving through the event from start to finish but rather of evoking some point of the event's existence. That is to say, in a state-like event only one moment somewhere in the middle of the event is represented, neither the beginning nor the end being evoked, and so there is an impression of nothing happening, of a "stative".

Here then we have two distinct ways of representing the event's duration corresponding to the two types of event expressed by the simple form: 1) a full-length, beginning-to-end view of event time which evokes the total duration of the event and gives rise to a dynamic, action-like event; 2) a momentary view of event time which evokes only one moment of the duration and gives rise to a stative event. These two views might be represented schematically as follows:



These would appear to be the "time schemata" Vendler set out to describe since one or the other is involved every time the simple form is used, be it to express habit, a performative, a future event or any of its other expressive effects (cf. Hirtle forthcoming).

This result brings out in a striking way the great advantage of examining verbs from the point of view of a constant element of grammatical meaning, their event time, rather than from the point of view of ever-changing lexical meaning. In order to bring out more adequately the role this grammatical element plays in providing a form for the lexical meaning, we shall now go on to ask what these two ways of representing event time have in common. Another way of putting the question is to ask what makes it possible for the same verbal construction, the simple form, to express two very different views of duration. That is, what is the meaning of the simple form, assuming of course that grammatical signs do have meaning? The question is important because unless we can discern a single, more fundamental meaning as the significate of the form, we shall have no alternative but to propose two separate but identical grammatical signs, two simple forms in English, to signify these two different meanings.

To reach an adequate view of the underlying or, to be more precise, potential meaning of the simple form, let us examine the relation between the lexical and the grammatical elements involved in each case: on the one hand the relation between a particular happening perceived as involving change and the beginning-to-end representation of duration, and on the other hand the relation between a non-changing, static event and the momentary representation of event time. This will reveal an identical relation between the lexical and the grammatical in the simple form, between the type of event and the particular representation of event time that "informs" it.

To experience something as developing and changing involves seeing its diverse elements or phases arising one after the other. That is to say, the different impressions constituting the lexical matter of an action-like event

arise successively and so its duration must be seen as stretching over a number of instants. By way of illustration, in the example:

He drank a cup of coffee.

the verb evokes the whole process - grasping the cup, the first sip or gulp, and so on to finally putting the empty cup down. The point is simply that these phases or impressions cannot be seen as simultaneous but must be imagined successively in time. Change involves successivity. Furthermore, to evoke all the impressions of development and change involved, one must represent the full duration of the event since every instant offers the possibility of further change. In short, to represent all that is involved in an action-like event the speaker must evoke its existence in time from beginning to end.

How about phenomena experienced as involving no development or change? The situation is very different here because just as the components of a changing phenomenon occur successively, so the components of a static phenomenon exist simultaneously. That is to say, if any part of our experience strikes us as a state, it is because its constituent elements are seen to co-exist in time. For example in:

She seems a bit tired.

the various impressions that go to make up the event are represented by the speaker as existing at the moment of speech. By definition, there can be no successivity between the impressions that constitute the lexeme because this would introduce an element of change. Thus in order to represent all that is involved in a state-like event, the speaker need evoke only one moment of its existence in time.

These considerations bring out clearly the link between the two time schemata and the dynamic vs. stative uses of the simple form observed in discourse. Each type of event can, of course, give rise to different expressive effects depending on other elements in the experience the speaker is representing, especially those expressed by the lexeme of the verb and by the subject. Vendler, for example, has shown clearly how the duration of action-like events can vary in length by distinguishing between accomplishments and achievements. State-like events can also suggest variable durations, especially in the light of the subject, as in:

The Earth is round.

The bubble is round.

However since variations such as these ("eternal truths" as opposed to a short-lived state in these two examples) can be traced back to factors other than the representation of event time, we shall not pursue them further here but rather get back to the question of the potential meaning of the simple form in English.

We have seen that the simple form can represent temporally the impressions constituting the notion of the verb in two ways, successively over a stretch of time and simultaneously in a single moment. These two ways of representing the temporality of the lexeme have this in common: both provide the time required to order, to arrange in time all the impressions involved in the notion. In other words, the role of the simple form is to represent the time necessary to "inform" the lexeme as a whole and so to make of it an event. And

since, as Guillaume often pointed out⁴, the only way we can represent time is by means of spatial features, it is not surprising that we should find it depicted here either as a point or as a line. This, then, is the role of the simple form: to satisfy the formal requirements for making a set of impressions into a temporal entity, an event, so that it can then be situated in time by means of the system of tense. And since it can fulfill this role in two ways, we must postulate that the simple form in tongue is an operator, a mechanism for producing a representation of duration as either a moment or a stretch of time. It is this representational possibility that constitutes the potential meaning of the simple form, a potential permitting it to produce the two actual meanings observed in discourse.

Viewing the simple in this way as a form providing a representation of enough duration to situate the notion as a whole in time is based on the assumption that all events have duration which is grammatically depicted in the verb. This clarifies the distinction made in Hirtle 1967 between the simple form as a PERFECTIVE which situates all the elements of the lexeme in time and the progressive as an IMPERFECTIVE which situates only part of these notional impressions in time (and so cannot express a state-like event). Furthermore it shows how the simple form with its one potential meaning in tongue can give rise in discourse to two distinct time schemata which, in combination with the verb's lexeme and other parts of the sentence, helps produce an extraordinary range and variety of expressive effect.

Space does not permit me to show how this analysis elucidates many problems of usage of the simple form (cf. Hirtle and Curat 1986 for one such problem) nor to bring out the contrast with each of the compound forms of the verb and ultimately to clarify the systems of voice and aspect, all on the basis of event time. Rather let me finish by stressing the main point of these remarks: because we cannot experience or conceive anything without some duration, when we wish to represent something as a verb, as a temporal entity, we must include as a *sine qua non* of its grammatical make-up a representation of duration. As a consequence, any adequate analysis of the verb as a grammatical form must take into account this necessary element of grammatical meaning, and any adequate analysis of the simple form in English must tell us whether the various impressions constituting the lexeme have all been represented as coexisting in one moment of the event's duration or whether they have been represented as arising successively over the total duration of the event.

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⁴ For example in Guillaume 1984 (p. 6): "the human mind is so made that it has the experience of time, but has no representation of it (it must, therefore, invent this representation, which will be a spatialization, representability being a property of space, and of space alone)."

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VI

DISCOURSE AND LITERARY STUDIES

ARTICLE VARIABILITY IN WRITTEN ENGLISH
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Since 1892 with the work of Henry Sweet, the early theoretical investigations of the English article system centered solely on grammatical descriptions, that is, on which grammatical context dictated the use of *the*, *a(n)*, or $\emptyset$ before nouns. These early descriptions claimed that the selection of a form of the article is determined by three noun classes, based on traditional grammar: common nouns, mass nouns and proper nouns. A common noun is distinguished as any noun that can be counted, like *eggs*, *cars*, and *clouds*, and may be preceded by *a* or *the* in the singular and $\emptyset$ or *the* in the plural. Mass nouns are uncountable, like *milk*, *salt*, *water*, and *air*, and may either take *the* or $\emptyset$. Proper nouns, like *Jill*, *Mr. Smith* and *St. Louis*, take only $\emptyset$ article (cf. Jespersen 1949).

In more recent descriptions, linguists have explained article usage according to discourse rules because the grammatical rules based on the aforementioned noun classes were inadequate to account for the many examples which seem to violate the grammatically-based rules. The modern explanations also purport to describe the psychological reality of the article system. To illustrate, the "internal rule" that distinguishes *a* from *the* is that *a* is used to introduce a noun in the first mention and that *the* is used to "recall" the noun in subsequent mentions (cf. Sapir 1921; Hewson 1972; Chafe 1976). The following pair of sentences demonstrates this distinction as might occur in connected discourse:

- 1) I bought a new micro-wave oven. (1st mention of oven)
- 2) The oven is a great time-saver. (subsequent mention)

Yet, even this analysis does not fully handle what seem to be exceptions. To deal with this, linguists further clarify that *the* is used if the speaker can assume the listener shares familiarity or can easily identify the noun being mentioned or if the noun is unique. Thus, when a speaker asks, "Did you feed *the* dog today?" or says, "*The* traffic is heavy," the speaker believes the listener can easily recognize the referent in each case. A second problem with the examples cited above is that often subsequent mentions take pronominal substitutions rather than a shift from *a* to *the*.

Except for theoretical linguistic descriptions, discussion of the article system appears only in reference grammars for English-as-a-second-language learners. Discussions for native speakers of English do not exist beyond brief pronunciation/

grapheme rules for selecting /ə/ vs. /ɪy/ or a vs. an. It is assumed that native speakers "know" intuitively the rules for the article system and that they share the same, invariable, rules. Similar assumptions have been made for other aspects of English grammar, as with negation. But just as negation has been shown to be variable in dialects, the article system has been shown to be variable in American vs. British English (Read 1973). If the system were to be invariable even within one variety of English, then it should follow that all native speakers should apply the same rules in the same contexts. Evidence from one study demonstrates that they do not adhere to the rules for article use nor do they agree in their choices as the rules would predict for American English.

Pica (1983) studied article usage in conversation, examining data from 62 speech events in which she asked the second party (usually a stranger on the street) how to get to an unfamiliar location. Pica identified several commonly cited rules for article usage and then compared the data from her encounters with the rules. Her first finding examined the first/second mention rule. She discovered that speakers more often used *the* to introduce the place (rather than *a*) and that they used proforms, synonyms or repetition instead of *the* for subsequent mention. Second, she found that speakers used *the* whenever they believe both speaker and hearer share some previous experiences, or whenever the item is in both participants' immediate view. Third, she found that speakers appeared to apply the rule of typicality [assumed to be universal to the larger context of place] in response to what she had interpreted as the uniqueness of the item, thus substituting *a* when recycling requests in which she had used *the*. She concludes from her study that the patterns of article usage cannot be described by the rules in the grammar texts and that the rules do not include the interplay of complex linguistic and social factors.

Pica's study not only provides strong evidence to challenge the rules offered in any of the pedagogical grammars/descriptions for ESL learners, it also encourages further study into the article system used in other contexts to attempt to describe what rules are shared by speakers of English. Since Pica's study was derived from oral language data, my study examines written language. Because rules in the grammar for written English are more conservative and generally more formal, it was assumed that the rules for articles as described in the literature may be more invariably applied by writers than by speakers.

To test this hypothesis, a cloze test was devised by modifying a 370-word passage entitled "Gorilla" from the 1986 Encyclopedia Britannica. This passage was chosen for its high number of familiar nouns--head, arms, female, male--and for its seemingly unambiguous contexts for applying the rules for article usage. The passage was assumed to adhere to rules for expository writing which in this case meant to characterize the life of the gorilla. Before every noun phrase, except for one phrasal idiom "one at a time," a blank space was inserted to provide a cue for participants to write *a(n)*, *the*, or $\emptyset$ --a total of 64 slots were created.

(See Appendix I.) Although the data were not gathered in natural contexts, (nor is it easy to conceive how to proceed to do so), the data collected appear in the same piece of extended prose with the same linguistic and discursive content for all participants. The variables affecting the data depend on linguistic as well as social and motivational factors which were not part of the study. However, any variability arising from the interplay of these factors was the object of the study.

A scoring scheme was devised: 2 points for the optimal response, 1 point for an acceptable one, and 0 for an unacceptable choice.¹ An optimal score of 128 was possible, based on the responses predicted by the rules for articles as articulated in the grammar textbooks. Then the original article as written in the Encyclopedia Britannica excerpt was scored at 127. In addition to choosing a one-point answer for item 51, the staff writer did not always choose the response of the majority of the participants in the study (as is discussed below).

After the optimal scores were established, a preliminary analysis of 16 randomly selected tests revealed that a 2-1-0 score distribution was not appropriate for 48 of the 64 items. To match the data, the 64 items were rescored and three sets of score distributions were created. 1) The largest set containing 41 items revealed a distribution of responses in which one choice of the three articles was invariably made. The other two choices were rarely or never made. The scoring for this set became 2-0-0. 2) A second set containing 11 items exhibited a difference of less than 20% between two of the choices. The scoring for this set became 2-2-0. 3) A final group containing 12 items showed a majority preference for one choice (73%) but a significant pull toward a second choice (at least 20%) with an occasional third choice. The scores for this set became 2-1-0. Thus, while the optimal score remained 128, the tidy scoring scheme originally devised had to be revised to reflect actual usage patterns. (Appendix II displays the above scoring sets.)

The test was administered to 64 native speakers ranging in age from 15 to 56 and representing grades 10 through graduate school. Sixty-nine percent of the participants were female, a potentially important factor but not examined in this study. All were linguistically naive and relied only on their "native-speaker" intuitions. None had specific training in linguistics to have obtained a metalinguistic awareness about articles in English. Only a few had studied a foreign language in school. When given the test, they received no explanation other than what was provided on the test page itself. The instructions were purposely devoid of grammatical terminology other than "article" in order to avoid calling forth any grammar-rule consciousness.

Their responses were transferred to a computer scoring sheet with A representing the indefinite article, B representing the definite, and C representing the $\emptyset$ article. The computer then scored each participant's choices and identified a range of scores from a low of 98 to 128. The mean score was 121 with a standard deviation of 5.96. Six of the participants received the

optimal 128, seemingly in close agreement with the Encyclopedia Britannica excerpt. A closer analysis reveals that three participants differed unanimously from the excerpt in their responses to items 18, 25 and 52, choosing *the* over the excerpt's *a* for the singular and $\emptyset$ for the plural. For item 44 only 39.7% of the participants agreed with the excerpt's *a* and for item 53 only 44.4% agreed with its $\emptyset$. Six participants tied the Encyclopedia Britannica's 127, but only two chose the same one-point answer for item 20; the other three chose the one-point answers for items 3, 21 and 36 compared to the excerpt's choice for item 51. Thus, 18.73% of the 64 participants received either a 127 or 128.

In all, 28 (43.8%) of the 64 participants missed the optimal score by 4 points or less and another 19 (29.7%) missed the optimal by 5-8 points, leaving 17 (26.5%) to fill the range from 98-119. These facts alone indicate that variability exists, but a closer examination of the items is required to thoroughly describe the variability in the patterns of responses.

The first set of items consists of those receiving a 2-2-0 score: items 3, 10-12, 25, 39, 44, 50, 52, & 53. As shown in Table 1, this set demonstrated a split of 33%/66% to nearly 50%/50% between only two choices, with a rare third choice as in items 3, 10 & 20.

	3	10	11	12	20	25	39	44	50	52	53
<i>a</i>	1.6	4.8	0	49.2	6.3	33.3	46	39.7	65.1	0	0
<i>the</i>	60.3	38.1	61.9	50.8	30.2	66.7	54	60.3	34.9	63.5	55.6
$\emptyset$	38.1	57.1	38.1	0	63.2	0	0	0	0	36.5	44.4

Table 1 2-2-0 Scores

Items 10, 12, 25, 39 and 44 represent five of the nine contexts in which the singular "gorilla" appears (1, 8, 21, and 60 are the other four). In every one of these, the minority response *a* echoes the Encyclopedia Britannica writer's choice, while the majority showed a preference for *the*. The issue of conflict seems to center on whether "gorilla" is a single specimen representing the species or the name for the entire species, predicting *the* or *a* respectively. This conflict is also evidenced in 10 and 11 and in 52 and 53 although these nouns are plural. They may also be elliptical forms--eg. "females"=female gorillas and "babies"--baby gorillas. However, if such were the case, then the distribution of responses ought to resemble the staff writer's choice for $\emptyset$ as in other contexts of "gorillas" in items 27, 34, 47 and 54 (see Table 4). Yet, except for item 10, items 11, 52 and 53 received more *the* choices, while items 27, 34, 47 & 54 received more $\emptyset$ answers, suggesting that the representative of the species interpretation is more common for both singular and plural "gorillas."

An analysis of these patterns by discourse rules is equally unsatisfying. Rules of given-new (first-subsequent mention) would predict *the* for items 12, 25, 39 and 44 since each of these could be interpreted as subsequent mentions of "gorilla" in reference to

item 1, which appears in boldface with no article in the original essay, as if presenting the sign on the cage in a zoo and not presenting the first mention which would be marked by *a* (See item 1, Table 3).² This special use of "gorilla" corresponds to *the*, which was the preferred response by 77.8% of the participants. They do not exercise the given-new rule, perhaps because the references are not adjacent and are, in fact, separated by several intervening lines of prose.³ Instead, participants seem to apply a special rule of parallelism which requires all references of "gorilla" to be marked with *the*. This parallelism may also account for the response patterns in item 50. Like items on Table 10, item 50 is post modified, so *the* is the prescribed choice, as found in the *Encyclopedia Britannica* essay. However, 65% of the participants in the study displayed a preference for *a*. If the patterns for item 51 are compared, a corresponding preference for *a* is exhibited by 76.7%, with 48% of those who chose *a* in item 50 also choosing *a* in 51.

So what are the conditioning factors in these contexts leading to the unpredicted alternatives displayed in Table 1, by nearly 50%? An examination of the syntactic placement of these eleven items shows that seven of them are sentence initial, if "actually" preceded item 25 is ignored (items 10, 12, 25, 39, 44, 52 & 53). Items 12, 25, 39 and 44 are sentence and paragraph initial and items 44 and 53 are sentence and line initial. The clue to the alternate choice may lie outside the linguistic and discursive explanations offered above, but simply be the result of the essay's visual layout. All except item 52 (again ignoring "actually" for item 25) are preceded by left-margin white space which combined with the blank space before each noun may have miscued mandatory article insertion. A different typing format is needed to test this possibility.

A second set consists of 12 items (1, 15, 16, 19, 27, 34-36, 47, 51 & 54), which received a 2-1-0 score. Each of these items shows a distribution preferring one choice by at least 73% over a second frequent choice. Tables 2-4 group these by response preference.

	15	21	51
<i>a</i>	81.0	73.0	76.2
<i>the</i>	19.0	27.0	22.7
∅	0	0	1.6

Table 2: Preference for *a*

	1	19	35	36
<i>a</i>	22.2	0	17.5	0
<i>the</i>	77.8	81.0	81.0	79.4
∅	0	19.0	1.6	20.6

Table 3: Preference for *the*

	16	27	34	47	54
<i>a</i>	4.8	1.6	1.0	1.6	0
<i>the</i>	20.6	20.6	20.6	25.4	27.0
∅	74.6	77.8	79.4	73.0	73.0

Table 4: Preference for ∅

The patterns are similar to those in the previous set: specimen vs. species appears again as a problematic feature for all items but 15, 35 and 50; the additional plural feature for items 27, 34, 36, 47 and 54 seems to play a role. Just as for similar items discussed previously, two conflicting rules seem to be at work so that either a variation between *a* vs. *the* or *the* vs. $\emptyset$ occurs. Part of this variation seems to be related to placement in the sentence; in this case, sentence/paragraph initial position seems to trigger a different choice with a preference for the generic *a* for singular or $\emptyset$ for mass and plural nouns, for items 15, 17, 21, 27, 34, 47 and 54. For item 1, the additional feature of first mention complicates the choice, perhaps accounting for much of the 27.2% of the *a* responses.

The item pair 15-16 resembles item pair 50-51, discussed previously, because the first member is further specified by a phrasal post-modifier containing the second member. Article usage rules dictate the selection of *the* for the first members, as was adhered to by the staff writer. However, 81% of the participants preferred *a* in 15. The corresponding preference for $\emptyset$ in 16 is 74.6%, with a 69% overlap of participants choosing *a* in 15 and $\emptyset$ in 16. An alternative explanation may simply be that the distinguishing factor is non-countable vs. countable for 16 and specimen vs. species for 51. In contrast, item 35 is also post-modified. The expected *the* is chosen by 81% of the participants. The higher incidence of *an* at 17.5% (vs. 0-4.8% for similar responses in Table 10) cannot be explained.

Item 19 is problematic syntactically. From one perspective "palms" may be read as part of the parallel series headed by "except" so the choice of $\emptyset$ is dominated by the existence of "its" in the head noun phrase. For participants to have chosen $\emptyset$, then, would support the rule of parallelism posited previously. However, from another perspective the phrasal post-modification of "palms" predicts *the* according to grammar texts. Table 3 shows the preference for *the* among the participants over $\emptyset$, which was the staff writer's choice.

The final set contains 41 items (2, 4-9, 13, 14, 17, 22-24, 26, 28-33, 37, 38, 40-43, 45, 46, 48, 49, 55, 56, 58-64). The agreement in this set ranges from 85.7% to 100% in favor of only one choice, with 12.7% or less for other choices. The high percentage of agreement may reflect the stability of some of the rules for articles as presented in grammar texts. One rule states that *the* precedes superlatives and ranking adjectives as in 2, 31 and 49. Figure 5 displays the high percentage of agreement; only one person chose *a* in 31 and another in 49.

	2	31	49
<i>a</i>	0	1.6	1.6
<i>the</i>	100.	98.4	98.4
$\emptyset$	0	0	0

Table 5

Superlative and Ranking Adjectives

As Table 6 shows, items 9, 40 and 45 are also uncountable nouns, but they also refer to unique places in our cultural experience.

	9	40	45	56	58
<i>a</i>	0	0	1.6	0	0
<i>the</i>	98.4	100.	88.9	4.8	1.6
$\emptyset$	1.6	0	9.5	95.2	98.4

Table 6: Uncountable Nouns

While items 9 and 40 are quite similar in distribution, item 45 shows an interesting, though small in number, second choice for "on ground" vs. "on the ground," reflecting a trend to eliminate *the* in phrases like "by air," "over water," and "under ground" (often written "underground").

A third rule states that no article is used before abstract nouns as in items 29, 30 and 33 as displayed in Table 7. The high percentage of selection of *a* reflects the rule's unambiguity and its contexts. A fourth rule dictates $\emptyset$ before nouns in definition statements of the species-is-class type as in items 28 and 48. These two sentences are nearly identical noun complement structures. As Table 8 shows, the preference for $\emptyset$ in both is identical.

	29	30	33
<i>a</i>	0	0	0
<i>the</i>	1.6	0	3.2
$\emptyset$	98.4	100.	96.8

Table 7: Abstract Nouns

	28	48
<i>a</i>	1.6	0
<i>the</i>	1.6	3.2
$\emptyset$	96.8	96.8

Table 8: Noun Complements

A closer look at which participants had chosen *the* revealed that the two who had chosen *the* in item 28 were not the same two who had chosen *the* in item 48.

The distribution for the remaining clusters of this 2-0-0 group reveals more variation for some items. Tables 9 and 10 present the distribution for pre-modified nouns (items 5, 8, 13, 14 and 17) and for post-modified nouns (items 41, 42, and 63).

	5	8	13	14	17
<i>a</i>	92.1	87.3	96.8	4.8	1.6
<i>the</i>	3.2	12.7	0	0	12.7
$\emptyset$	4.8	0	3.2	95.2	85.7

Table 9: Pre-modified

	41	42	63
<i>a</i>	1.6	1.6	0
<i>the</i>	95.2	96.8	92.1
$\emptyset$	3.2	1.6	7.

Table 10: Post-modified

Items 5, 8 and 13 are singular, so the possibilities are *a* or *the*. *A* is the dictated choice since the nouns are unspecific. However, for both items 5 and 13, $\emptyset$ was also chosen. The contexts for this may be that these items appear in a list of physical characteristics, in which participants may view an article as optional. For nouns which are post-modified, grammar text proscriptions

predict *the* because the modification restricts the nouns to a particular reference. While the preference in items 41, 41 and 63 is for *the*, participants also chose $\emptyset$ even though 41 is singular so this should not even have been an option. No similarities in context can explain these choices. The remaining members of the 2-0-0 group represent the remaining countable nouns. Table 11 shows the preference is for *a* for the singular nouns, except when the noun is "gorilla," as previously discussed. Table 12 shows the preference is $\emptyset$ for plural nouns. Both patterns of distribution fit the rule for the generic "any" interpretation dictating *a* or *the*. Yet, in both contexts, participants selected the not unlike choices for the 2-1-0 or 2-2-0 sets, only more rarely. In contrast, *the* was the near unanimous choice for items 60 and 64 in the summary sentence. The choice of *the* in both slots ties the items to "the gorilla" in item 1 within a macro-structure of parallelism.

	23	24	26	46
<i>a</i>	95.2	93.7	100.	98.4
<i>the</i>	3.2	6.3	0	0
$\emptyset$	1.6	0	0	1.6

Table 11: Singular Nouns

	22	32	37	38	55	59	61	62
<i>a</i>	0	0	0	0	0	0	0	0
<i>the</i>	4.8	3.2	1.6	0	4.8	6.3	1.6	4.8
$\emptyset$	95.2	96.8	98.4	100.	95.2	93.7	98.4	95.2

Table 12: Plural Nouns

Perhaps that none of these is sentence/paragraph initial is the determining context rather than the semantic information of the sentence or paragraph. It is not determinable what motivates the higher degree of agreement in these 2-0-0 items.

This study confirms that much variability in article usage exists in written English. Just as Pica demonstrates in her study of oral English, this study has found that grammar book rules do not describe the choices writers make. Yet, this study raises as many questions as it answers. One path to explore is the possibility that some writers have a different set of rules, by studying the individual patterns for the consistency of choice in those contexts where responses depart from those predicted by grammar books. Another avenue is to observe how patterns of article usage may be shifting. In business and technical writing, where word economy is essential, different patterns of article usage may be observable. There may be other written contexts in which different patterns exist. Still another route is to re-examine the semantic notions currently applied to the article system and derive fresh descriptions based on usage patterns. Finally, this study also points to some important implications for English as a second language teachers—implications I plan to examine in a subsequent study.

Appendix I
Cloze Passage

If necessary re-read the instructions for this task on page 1. Study the examples given to you below. Notice that there are many possibilities for one sentence. Write a (an), the, or 0 to indicate your choice for each sentence.

EXAMPLES: I bought a book recommended by ~~the~~ experts.
I bought ~~the~~ book recommended by 0 experts.
I bought a book recommended by ~~0~~ experts.
I bought ~~the~~ book recommended by ~~the~~ experts.

1 gorilla is 2 largest of 3 anthropoid (humanlike) apes. This powerful animal has 4 huge shoulders, 5 broad chest, and 6 long arms and 7 short legs. 8 large male gorilla living in 9 wild may weigh 450 pounds (204 kilograms). Standing up on its legs, it may be 6 feet (1.8 meters) tall. 10 females usually weigh about 200 pounds (91 kilograms), and are shorter than 11 males.

12 gorilla looks fierce. It has 13 shiny black face and 14 large, pointed canine teeth. 15 thick ridge of 16 bone juts out above its eyes. 17 black or brownish hair covers all of 18 gorilla's body, except its face, and 19 palms of its hands and 20 grayish back. When 21 gorilla is excited or wants to frighten away 22 intruders, it stands up on its legs and slaps its cupped hands against its chest one at a time. This produces 23 sound somewhat like that of 24 drum.

Actually, 25 gorilla is not as fierce as it looks. It will not hurt 26 human unless it is molested or attacked. 27 gorillas are 28 shy, friendly animals that seem to need 29 companionship and 30 attention. 31 first gorillas kept in 32 zoos did not live long, and some experts believe they died from 33 loneliness. 34 gorillas lack 35 outgoing personality of their relatives, 36 chimpanzees, and they are less eager to perform 37 stunts and 38 tricks.

39 gorilla usually walks on all fours, with its feet flat on 40 ground and 41 upper part of its body supported on 42 knuckles of its hands. It often stands up on its legs, but walks only 43 few steps in this position. 44 gorilla usually travels on 45 ground, but sometimes it climbs into 46 tree to sit, eat, or sleep.

47 gorillas are 48 quiet animals, even though they can make about 20 different sounds. 49 most startling gorilla call is 50 roar given by 51 angry male. 52 babies whimper when distressed, and scream when frightened. 53 adults grumble softly when contented.

54 gorillas have no real enemies except 55 human beings. 56 people hunt 57 gorillas for 58 food, capture them for 59 zoos, and cut down their forests. Consequently, 60 gorilla has become rare in 61 many parts of its African home, and 62 scientists believe that 63 survival of 64 gorilla is threatened.

Appendix II

Scoring Scheme

item 1	a=1	the=2	Ø=0	item 33	a=0	the=0	Ø=2
item 2	a=0	the=2	Ø=0	item 34	a=0	the=1	Ø=2
item 3	a=0	the=2	Ø=1	item 35	a=1	the=2	Ø=0
item 4	a=0	the=0	Ø=2	item 36	a=0	the=2	Ø=1
item 5	a=2	the=0	Ø=0	item 37	a=0	the=0	Ø=2
item 6	a=0	the=0	Ø=2	item 38	a=0	the=0	Ø=2
item 7	a=0	the=0	Ø=2	item 39	a=2	the=2	Ø=0
item 8	a=2	the=0	Ø=0	item 40	a=0	the=2	Ø=0
item 9	a=0	the=2	Ø=0	item 41	a=0	the=2	Ø=0
item 10	a=0	the=2	Ø=2	item 42	a=0	the=2	Ø=0
item 11	a=0	the=2	Ø=2	item 43	a=2	the=0	Ø=0
item 12	a=2	the=2	Ø=0	item 44	a=2	the=2	Ø=0
item 13	a=2	the=0	Ø=0	item 45	a=0	the=2	Ø=0
item 14	a=0	the=0	Ø=2	item 46	a=2	the=0	Ø=0
item 15	a=2	the=1	Ø=0	item 47	a=0	the=1	Ø=2
item 16	a=0	the=1	Ø=2	item 48	a=0	the=0	Ø=2
item 17	a=0	the=0	Ø=2	item 49	a=0	the=2	Ø=0
item 18	a=1	the=2	Ø=0	item 50	a=2	the=2	Ø=0
item 19	a=0	the=2	Ø=1	item 51	a=2	the=1	Ø=0
item 20	a=0	the=1	Ø=2	item 52	a=0	the=2	Ø=2
item 21	a=2	the=1	Ø=0	item 53	a=0	the=2	Ø=2
item 22	a=0	the=0	Ø=2	item 54	a=Ø	the=1	Ø=2
item 23	a=2	the=0	Ø=0	item 55	a=0	the=0	Ø=2
item 24	a=2	the=0	Ø=0	item 56	a=0	the=0	Ø=2
item 25	a=2	the=2	Ø=0	item 57	a=0	the=1	Ø=2
item 26	a=2	the=0	Ø=0	item 58	a=0	the=0	Ø=2
item 27	a=0	the=1	Ø=2	item 59	a=0	the=0	Ø=2
item 28	a=0	the=0	Ø=2	item 60	a=0	the=2	Ø=0
item 29	a=0	the=0	Ø=2	item 61	a=0	the=0	Ø=2
item 30	a=0	the=0	Ø=2	item 62	a=0	the=0	Ø=2
item 31	a=0	the=2	Ø=0	item 63	a=0	the=2	Ø=0
item 32	a=0	the=0	Ø=2	item 64	a=0	the=2	Ø=0

Notes

¹This scheme is a modification of the "Developed Form Values" used in computing a "Syntax Acquisition Index." This system was devised by Burt et al. for computing the degree of grammaticality of morpheme usage in ESL learners' speech.

²Saul Levin (SUNY-Binghamton) volunteered this interpretation in contrasting the use of "the gorilla" vs. "the dog." The latter refers to a specific dog belonging to a particular owner; the former refers to the label attached to an animal on display.

³Gary Prideaux (University of Alberta-Edmonton) has found in a study of oral language that the given-new rule seems to apply only between adjacent utterances and does not hold up if several utterances intervene between the first and subsequent mention.

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COMPARISONS OF SIMILARITY IN TARAHUMARA

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1.1 Basic Word Order

The unmarked or basic word order of Tarahumara* is SXV, although it shares with many other Uto-Aztecan languages a great deal of freedom in the permissible order of syntactic elements. For example, while item (i), below, represents the favorite clause type, almost any permutation of its elements is allowable and construable. But elicitation invariably yields a much larger proportion of SXV clauses than clauses of any other type, and SXV order predominates particularly in the simple clauses that contain a copula, cf. (6), below.

- i. nehe -Ko we sahpú raíca.
1sg Pn very fast speak I talk very fast.
- ii. tamói -Ko bihti-jí mocí -am pa
1pl Pn house Loc be (seated)Pl Prtc Jct

Among the features typologically supporting the SXV analysis of Tarahumara is the predominant use of Postpositions.

- iii. nehe -Ko tata uWa raíca
1sg pn dad with speak I am speaking with my dad.

Another noteworthy feature of Tarahumara syntax is the frequent occurrence of discontinuity in the syntactic realization of semantic propositions, often involving the syntactic interlarding of elements of complex propositional nections, cf. (iv):

(constituents representing the embedded proposition in brackets):

- iv. nehe -Ko [bihti -jí ahti-gó] ma'e-a [níriu] ne -Ko [nico] ba
1sg Pn house Loc seated think be 1sg Pn Nicho Jct
I think Nicho is (sitting) in the house.

In Tarahumara, as in other SXV languages, there are two major positions in the clause that are associated with communicative prominence in the expression of discourse material. Because of the use of initial position to signal the Point of Departure (Topic) of the utterance, as well as, in the unmarked case, both the most involved participant in an event (e.g., Agent), and the participant in the event whose Point of View is taken by the speaker (semantic Focus, grammatical Subject), that position invokes in the hearer a

strong expectation for salience in the material that will appear there. And final position, which is normally associated with the Event in SXV languages, invokes a prominence of its own, by reason of the inherent centrality of the Event or Process in a localized propositional network. Thus in the unmarked clause, it is the surface form of the Topic/Agent/Subject that appears in initial position and that of the Event that appears in the final position; and the middle position is reserved for the expression of less prominent material. Exploitation of the prominence of initial and final position in the clause for the realization of semantic elements other than the Focus/Agent or the Event results in an interpretation of the propositional network that is counter to expectation. The marked salience of such elements is consequently thereby signalled in the syntactic form. Some notions are inherently more important than others because we have human cognitive systems, others because of the content of a culture, others because of the specific and individual demands of the immediate discourse context; but in each case speakers have recourse to choices in the packaging of discourse information that reflect competing/coexisting semantic priorities, thereby increasing or decreasing the prominence of portions of a given underlying semantic network.

1.2 Comparison Schema: Semantics

Tarahumaras do things, experience things, and imagine things; and they like to talk about the happenings, real, unreal, and surreal, that touch them. One of the ways in which they conceptualize and talk about phenomena is by comparing them; as to their existence, their attributes, or their functions. In this paper I will focus on the interplay between the semantic/pragmatic content of comparison and its formal expression in Tarahumara syntax. No attempt can be made here to be exhaustive.

While there are many kinds of comparison and many ways in which comparison may be expressed, comparisons are commonly accomplished by way of selecting a propositional network to be Compared, mentioning or implying a Standard of Comparison, and making or implying a Statement of Relation (SR), e.g., similarity/dissimilarity, associating the two propositional networks. The Compared proposition is most often the material that is foregrounded, and the Standard propositional complex together with the Statement of Relation are typically backgrounded or often left unsaid altogether. (This latter suppression of underlying relevant discourse information is entirely unremarkable since the speaker who has chosen to speak must always leave unsaid and treat as computable much, if not most, of the background propositional material necessary for understanding what is being said.) These considerations are schematized in Figure 1.

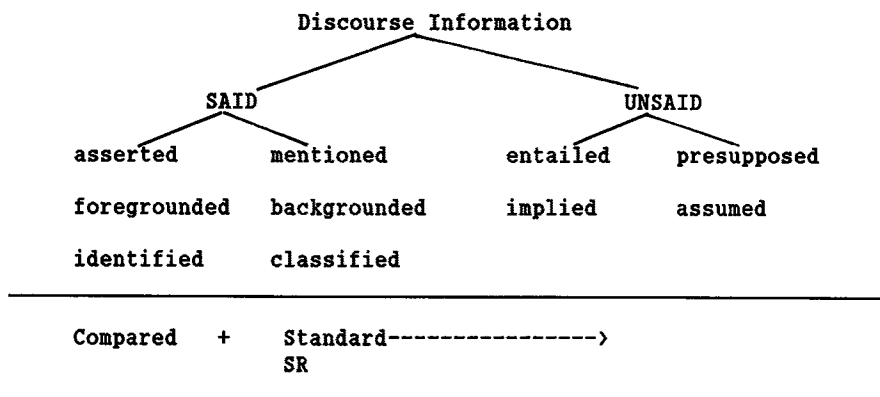


Figure 1

Comparison can range over whole propositions or over portions of propositions. Its scope is either holistic, i.e., it involves the predication of a relation of similarity/dissimilarity of two or more whole entities or concepts within a single propositional network; or it is complex, i.e., it involves the semantic interconnection and integration of more than one propositional structure by means of the predication of a relation of similarity/dissimilarity between/among specific parts of their networks.

2.1 Implicit Comparison

The weakest form of comparison is seen in the use of a construction in the syntax to assert the connection of some attributive semantic property (e.g., size, color, hypernymy, partonymy) of an entity or an event. The purpose of such an expression is to specify where on some variable scale of value a proposition, or one or more of its arguments, belongs. To assert as in:

- (1) paróci -ra océr-ame kame
 grandfather Kin rel old Prtc be

that 'grandfather is old', is not to achieve some putative absolute placement for the entity, 'grandfather', on the continuous dimension of young/old (age in general) but rather to assert 'grandfather's' age relative to an implied Standard of age (e.g., the age of (a subset of) other people in the (human) community as against that of redwood trees). The assertion of (all of) utterance (1) constitutes the Compared proposition; there is no mention, and both the Standard and the Comparison Relation remain implicit. In such expressions a Standard is always implicit if it is not overtly expressed, and the similarity/dissimilarity distinction is neutralized in the absence of further context. cf. also (2).

- (2) ne -Ko wa'ró hu nehe -Ko ba
 1sg Pn big be 1sg Pn Junct I am tall.

2.2 Implied Comparison. A second kind of comparison involves expressions that function to assert a property of the Compared proposition vis-a-vis the Standard, with overt mention of either the Standard or the Statement of Relation, but not both. In Tarahumara the bound morphemes most commonly employed to signal the implicit comparison in a statement of dissimilarity are the same morphemes used to signal simply a degree of intensity. (This contrasts with the English comparative and superlative bound morphemes {-er, -est} in that their use is restricted to either implied comparisons (with non-mention of the Standard) or to comparisons in which the Standard is explicitly mentioned, cf. 2.3, below.) In Tarahumara, there exists the possibility of ambiguity, in the absence of context, for utterances like (3).

- (3) *ici -Kó o'ru -bera ke*
 Demo big Intens be
 He is the biggest. (He is extremely big.)

Use of this syntactic formula for expressing both comparative (with {-be}, 'very'), and superlative (with {-bera}, 'extremely') is frequent in Tarahumara comparisons of dissimilarity.

A further device for comparison with an implied Standard is the use of one of a number of free forms like *abé*, 'same', *cerahpé*, 'more', or *birepi*, 'only' in constructions like (4).

- (4) *ici biré o'ru -ra birepi uku*
 Demo one big Nsuf only be
 He is the biggest (of all). (He alone is the big one.)

In utterance (5) the signalling of the possible semantic presence of an implied comparison involves the use of asyndetic parataxis. Also the non-presence of the copula in the second clause together with the use of a subordinating intonation pattern (not shown) serves to mark the relation of the propositional schemata underlying the two clauses as one of comparison (dissimilarity). Initial position marks the first clause as asserting the foregrounded proposition. The Standard proposition is overtly mentioned in a backgrounded coordinate construction; here, by contrast to utterance (3), it is only the SR (dissimilarity) that is implied.

- (5) *rósa -Ko ta hu nána -Ko wa'ru'*
 Rosa small be mom big
 Rosa is shorter than her mother. (Rosa is short; her mother is tall.)

2.3 Explicit Comparison:

2.3.1.1 Comparison of Entities

In explicit comparison the Compared proposition (or arguments), together with the Standard, and the SR are all at least partially included in the Said.

Utterance (6) is an example of a comparison with a holistic scope.

The underlying conceptual network can be roughly schematized as: resemble(entity1, entity2); and the typical syntactic frame employed in Tarahumara is given as Syntactic Formula (a).

Abbreviations: [N=Nominal, V=Verb(al), G=Group; Cmp=Compared; Std=Standard; SR=Statement of Relation]

Propositional Schema 1: resemble(entity1, entity2);

Syntactic Formulae:

Cmp Std SR
(a) NG + NG + Vcop

(6) parócira ohí kame
grandfather bear be Grandfather is a bear.

The semantic network for (6) is represented graphically in Figure 2. Propositional elements signifying DOMAINS are in upper case, and those signifying Particular concepts are in lower case. (In this and subsequent loose relational network schemata presented in the Figures, the circled material is included in the Said; the remainder constitutes part of the relevant Unsaid.)

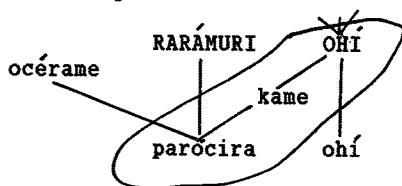


Figure 2

On its face value, this assertion is very unlikely, and for that reason it is made sense of only as a metaphorical transformation. Its construal involves a search for relevance-in-context that ranges across the typical attributes and actions associated with BEAR, and a selection of those attributes or actions that fit well into the immediate discourse network. The result is that some attributes of OHÍ become inferentially associated with parócira as a metaphorical extension.

A slightly more prosaic kind of simple comparison is encountered in (7)-(9). Explicit comparisons of this type make use of the relative particle mapu. This particle appears either alone or in combination with several different bound morphemes in constructions often used to express classification/ backgrounding/mention, as opposed to identification/foregrounding/assertion. For example the composite form mapuregá functions in complex sentences as a subordinating particle. The usual syntactic formula for expressing propositions of this simple type is:

Cmp SR Std
(b) NG + mapu-ré (-X) + NG.

(7) parócira mapu-ré-kare ohí
grandfather like be bear Grandfather is like a bear.

- (8) eci rehoi map-ré-kam-gá ciba
 Demo man like be goat That man is like a goat.
- (9) (juani) mapu-re-gá o'ru ohí (kame)
 (Juan) like big bear be (John) is like a big bear.

2.3.1.2 Comparison of Attributes of Entities

Utterances (10)-(12) represent the favorite (unmarked) word order type for comparing simple attributes.

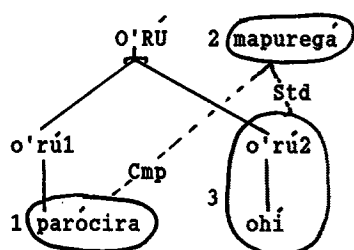
Propositional Schema 2: resemble(attr(entity1), attr(entity2));
 Syntactic Formulae:

(Unmarked Order)

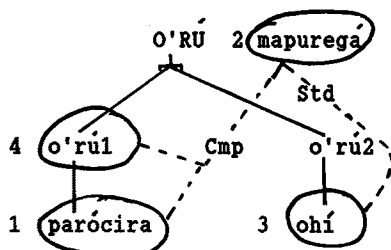
Cmp SR Std Cmp
 (a) NG + mapure(gá) + NG + Adj

- (10) parócira mapuregá ohí o'ru (kame)
 grandfather like bear big be
 Grandfather is big like a bear.
- (11) miná sewa aporé asúkara rosá-kame
 that flower resemble sugar white be
 That flower is white like sugar.
- (12) ici 'rí garí mapuré tosí o'ru -bé
 Demo Deic house resemble tree big Intens
 That house there is as big as a tree.

Compare (10) with the situation that obtains in (9) where the unmarked Adj+N order in the NG, o'ru ohí, and the phrasal stress (not shown) on ohí instead of on o'ru signal classification rather than identification. But the holistic interpretation of the comparison of the entities in (9) is impossible for (10), because the order of o'ru and ohí is reversed, indicating the absence of tightness in the relation between the entity, ohí and the attribute, o'ru. Also in (10) o'ru bears phrasal stress, signalling a high degree of communicative prominence (news value) for that element. It is then apparent that in (10) there is discontinuity in the syntactic realization of the foregrounded Compared elements, exploiting both initial prominence and final prominence; and the backgrounded Statement of Relation together with the Standard are relegated to the middle position in the clause (a position of low prominence in SXV languages). The semantic networks for (9) and (10) can be contrasted as schematized in Figure 3. The Said is circled, and the syntactic order is shown by numbering the circles:



(9) parócira [mapuregá o'ru' ohí]
grandfather big bear



(10) parócira [mapurega ohí] o'ru
like bear big

Figure 3.

As the illustration shows, the identifying attribute, o'ru, 'big', in (10), is overtly predicated of the entity, parócira, as part of the Compared material (shown as o'ru1), and o'ru2 is an implied attribute of the Standard, ohí.

(Marked Order)

In (13) the Statement of Relation takes the least prominent (immediately post-Topic) position, and the Standard is realized in final position. This results in a marked prominence for the Standard and a demotion of the prominence of the Compared attribute, o'ruberá, even though it is similarly predicated of the Compared entity.

Cmp SR Cmp Cmp Std
(b) NG + mapuregá + Adj + Vcop + NG

(13) ici-gó mapregá o'ru-bera ke paróci -ra
Demo Tp like big Intens be grandfather Kin rel
He is very big like his grandfather.

A further increment of demotion in the prominence of the attribute of the Compared entity, o'ruberá, is seen in (14). Here the attribute appears in the least prominent position in the clause. The copula may either follow the SR as in (14), or precede the SR as is (15), but in either case it is part of the expression of the Compared proposition.

Cmp Cmp SR Cmp Std
(c) NG + Adj + mapuregá + Vcop + NG

(14) ici -Kó o'ru -bera mapuregá ke paróci -ra
Demo Tp big Intens like be grandfather Kin rel
He is very big like his grandfather.

In (15) and (16) the entire Compared proposition precedes the SR and the Standard. The effect is to promote the prominence of the SR and the Standard entity, while demoting the prominence of the attribute of the Compared entity. The centrality of the Compared entity in the overall proposition is maintained by its realization

in initial position.

Cmp (SR) Cmp Cmp SR Std
(d) NG + Degree + Adj + Vcop + mapuregá + NG.

(15) ici -Kó abé o'ru -ra ke mapuregá nehé
Demo Tp equal big -Nsuf be like 1sg Pn
He is the same size I.

(16) nehé -Ko nóca -re we ga'rá hu mapuregá caboci
1sg Pn Tp work Nsuf very good be like outsider
My work is just as good as a Mexican's.

Expressions for comparison of relatively permanent (inalienable) attributes within propositions like those above appear normally to contain a copula in Tarahumara; those involving more temporary (alienable) properties do not. Otherwise the unmarked simple clause type is employed in the same way as above, and the word order is similarly manipulated to express degrees of prominence of arguments in the proposition, cf. the discontinuity of the Compared in (17) and (18).

(Unmarked Order)

Cmp SR Std Cmp
(e) NG + mapuregá + NG + Adj

(17) hípi -Ko mapuregá rapoko sepe rahtá
today Tp like yesterday very hot
Today it is very hot just like yesterday.

(18) ici -Kó apregá neé o'mona.
Demo Tp like 1sg Pn sad He is sad like me.

(Marked Order)

Cmp Cmp SR Std
(f) NG + Degree Adj + mapuregá + NG

(19) rósa -Ko we aparú-ame mapuregá nana
Rosa Tp very angry Prtc like mom
Rosa is very bitchy like her mother.

(Highly Marked Order)

Cmp SR Std Cmp
(g) Adj + mapuregá + NG + NG

(20) nasinákuri apregá nehé ici -gó.
lazy like 1sg Pn Demo Tp
Lazy like me, he is.

2.3.2 Comparison of Events

2.3.2.1 Holistic Comparison of Events

Comparison of events or circumstantial attributes of events is

often more complex than comparisons involving entities and/or their attributes, and that semantic complexity is indirectly reflected in a corresponding increase in the complexity of the syntactic formulae employed to express them. The particular events to be compared may be viewed holistically as in (21) and (22), or they can be viewed as having component parts which can be compared as, for example, in (25). In utterances that express holistic comparison of events, the commonest syntactic formula involves a simple clause with the unmarked order as in (21) and (22).

Propositional Schema 3:

resemble(event(entity1), event(entity2))

Syntactic Formulae:

(Unmarked Order)

Cmp SR Std Cmp
(a) NG + mapuregá + NG + VG

(21) nehé mapuregá tata ra'ica
1sg Pn like dad speak I talk like my dad.

Cmp SR Std Cmp
(b) NG + mapu-simí + NG + VG

(22) miná rehoi mapu-simí o'kocí ko'á
Demo man Rel do dog eat
The man eats like a dog. (The man that eats like a dog).

2.3.2.2.1 Non-holistic Comparison of Events

The order of elements in (24) differs from the unmarked order in that the Standard, cirugí, 'bird', appears in final position immediately following the Compared event; likewise in (23), except that here the Standard manner, tam, 'same way' of the otherwise implied event, ena2, walk(bear), is fractured off from the rest of the implied event, walk(bear), and mentioned in reference to the Standard participant, ohí, 'bear', while enal is asserted of the Compared participant, parócira, 'grandfather', as part of the foregrounded propositional material in the comparison, cf. Figure 4.

(Marked Order)

Cmp SR Cmp SR Std
(c) NG + mapuregá + VG + (tam) + NG

(23) parócira apuregá ena tam ohí
grandfather like walk same as bear
Grandfather walks like a bear.

(24) nehé -Ko mapuregá nahí cirugí
1sg Pn Tp like sing bird
I am singing like a bird.

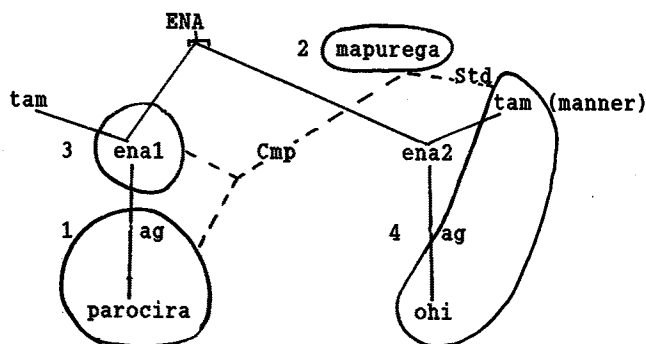


Figure 4

2.3.2.2.2 Increasing Complexity of Events.

In complex propositions containing higher order events like mací, 'know (how to)', and lower order events like 'a', 'sew', as in (25) - (27), the unmarked order of the syntactic elements is as above, cf. (25). In (25) and (26) the event is viewed as integrated (holistic); in (27) it is viewed as less integrated with mací selected for demotion and 'a' selected for normal prominence as part of the Compared proposition.

(unmarked order)

Cmp SR Std Cmp Cmp
(d) NG + mapuregá + NG + Vh + V1

- (25) mina -ko we mací 'a mapregá éera
Demo Tp like mother very know sew
She knows how to sew very well like her mother.

(marked order)

Cmp Cmp Cmp SR Std
(f) NG + Vh + V1 + mapuregá + NG

- (26) mina -ko we mací 'a mapregá éera
Demo Tp very know sew like mother
She like her mother can sew very well.

Cmp Cmp SR Std Cmp
(e) NG + Vh + mapuregá + NG + V1

- (27) mina -ko we mací mapuregá éera 'a
Demo Tp very know how like mother sew
She can sew very well like her mother can.

Figures 5a - 5c illustrate these variations in the packaging of a single chunk of discourse material as represented in utterances (25)-(27).

(25)

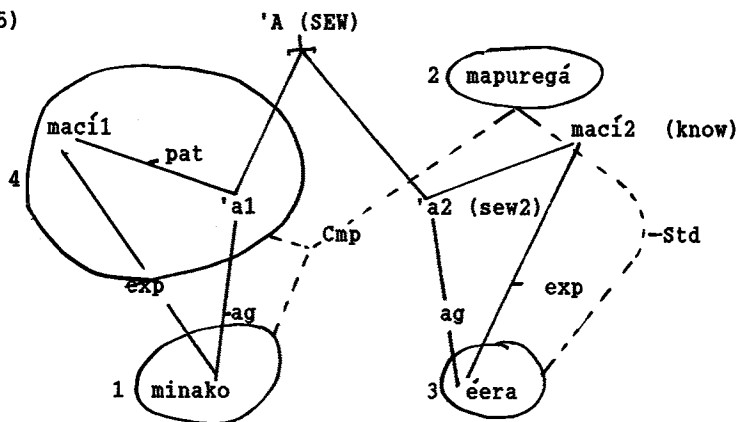


Figure 5a

(26)

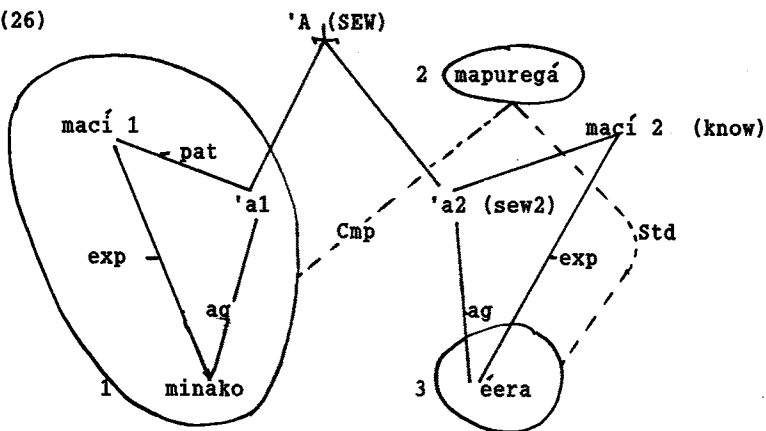


Figure 5b

(27)

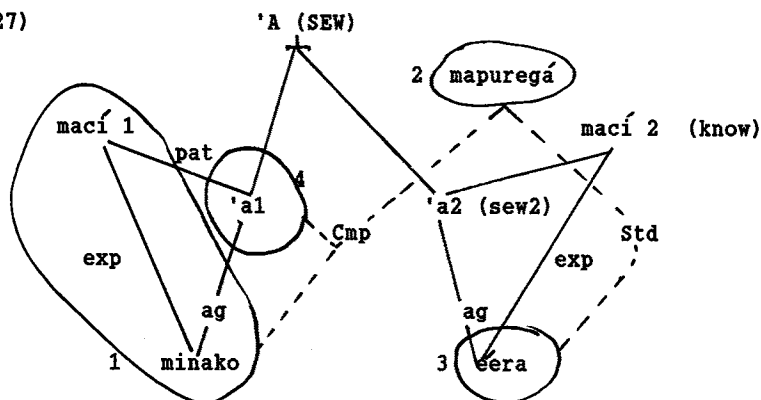


Figure 5c

In (28) we have an example of a negative assertion of the Compared proposition, namely that the old man can not run fast (now), as against the Standard, an implied proposition (with same subject) that 'he was able to run fast earlier'. Since the comparison is between propositions with same topic/experiencer/subject, and the implied Standard event belongs to the same Domain as the Compared event, differing from it only by the presence of the contrastive temporal attribute, *ki'á*, 'earlier', the Standard event can be suppressed from mention. In comparisons of this type, the commonest word order places the SR and the Standard in utterance final position, after the Compared complex event has been asserted in an SXV clause of its own.

Cmp Cmp SR Std
(f) NG + (neg) + VG + mapuregá + Adv

(28) océr -am -Ko ke tasi umero sahpú 'ma aprigá ki'á
old Prtc Tp Neg Neg be able fast run like earlier
The old man can't run as fast as before.

Utterance (29) overtly expresses both the agent and the event of the Standard. While this syntactic construction is employed frequently in Tarahumara to express comparisons of dissimilarity, its use in comparisons of similarity is much less frequent, since identical portions of the Compared propositions can be treated as computable and left unsaid. (An Equi-deletion metaphor is inappropriate for the treatment of these phenomena in a functional analysis like the present one, since the underlying semantic network remains computable, and the material simply does not become realized in the surface form.)

Cmp Cmp SR Std Std
(g) NG + VG + mapuré + VG + NG

(29) nehé raíca aprigá raíca muhé
1sg Pn speak like speak 2sg Pn I talk like you talk.

In (30) the mentioned Standard takes the initial position in the complex construction, thereby indicating its prominence as the marked topic; and the asserted Compared proposition follows the Standard.

(Marked Order)

SR Std Std Cmp Cmp
(h) mapuregá + NG + VG + Vcop + NG + VG

(30) mapuregá nehé bai -a hu ici we bai -a Pa
like 1sg Pn drink Tns be Demo very drink Tns Junct
Like me he drinks a lot.

3. Summary. In addition to presenting and discussing possible semantic and syntactic contours of some comparisons of similarity in Tarahumara, I have also attempted to demonstrate that

Tarahumara syntax is not, in fact, an example of a putative 'free word order language', but that it is functional in discourse contexts. The hypothesis presented here argues in part from a typological perspective and is intended as an heuristic to further study. As such the paper is a report on work in progress. Also, as briefly mentioned in the above discussion, the notions of 'salience' and 'prominence' are not always precisely delineated here, but are rather intended as general reference either to the specific kinds of emphasis invoked here, or other important kinds, e.g., considerations of given/new, etc. Word order is, of course, not the only device manipulated in Tarahumara for such functions, but additional features could not be elaborated here.

* Tarahumara is a Southern Uto-Aztecan language spoken by 50 to 60 thousand inhabitants of a remote region in the Sierra Madre Range in the state of Chihuahua, Mexico. Included in the Tarahumara speaking area are more than 5,000 square miles of rugged country, dominated by a broad central range that topographically divides the region into three parts: the eastern slope, the central mountain heights, and the western slope. Significant descriptive work has been done in the central area by the Jesuit, Father David Brambila (cf. his *Grammática Rarámuri*, 1953), and others; work on Western Tarahumara is being done by Donald Burgess (cf. his *Western Tarahumara*), with the SIL in Catalina, AZ. The dialect of Tarahumara treated in this paper is spoken on the eastern slope, and the data presented here are based primarily on the speech of five informants from the area of muriciki and tuciaci, near the mestizo community of Baqueachi in a remote setting ca. 120 km to the south and west of the city of Cuauhtemoc. While all of the informants are bilingual in Tarahumara and Spanish, none can read or write either language, i.e., they have a strictly oral culture.

GRAMMARS OF GENDER IN CLARISSA

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Although he exploited some of the conventions of earlier fiction, Samuel Richardson wanted his novels to turn impressionable young readers away from the popular romances and novels of the day and toward a serious consideration of Christianity and its claims on them, particularly with respect to love and marriage. His novels' epistolary form, in which characters write their own accounts of events and comment on them more or less as they unfold, allows wide scope for reflection on subjects of special concern, for general statements about the world which, although arising from events and situations in the fiction, do not refer exclusively to them, and these reflections play an important role in Richardson's didactic purpose. Thus it is no accident that Clarissa Harlowe and Robert Lovelace, the protagonists of Clarissa, should be acute observers of and insistent moralizers on relations between men and women.

Modern critics have been unsympathetic to general statements in fiction, and Richardson has been criticized for his didactic digressions, but nonetheless there are good reasons for studying the reflections in Clarissa. Roger Fowler has argued that since they encode the values a narrator takes for granted or wishes actively to promote, linguistic analysis of general statements can lead to a better understanding of the cultural codes and ideological perspectives informing novels. Reflections on gender are of particular interest because Clarissa involves an exemplary woman being put on trial by a libertine who believes that by seducing her he will prove true the tenets of his rake's code -- that any woman, suitably tempted, can be seduced, that all women are rakes at heart, and that once a man has subdued a woman through seduction she will remain subdued. Lovelace's specific formulations of this code are characteristic of eighteenth-century England, but both his and Clarissa's reflections on what it means to be a woman or a man express a set of assumptions that clearly form the basis on which his views could be developed. Most of these assumptions are familiar, many are repugnant, and a large number have proven stubbornly persistent. Analysis in terms of transitivity and ergativity allows an efficient and insightful characterization of them.

In discussions of systemic grammars, structures of transitivity and ergativity functions are most familiar in analyses of independent clauses, where they interpret the meanings expressed by the clause 'in its ideational function, its role as a means of representing reality' (Halliday, 1985:

p. 101), but they occur in other areas of the grammar as well, in independent clauses, in the structure of nominal groups with clauses embedded at Qualifier, and in the structure of prepositional phrases. Thus a number of different grammatical units are potentially of interest for a discussion of transitivity and ergativity. Reflections function interpersonally and textually as well as ideationally, and the ideology of gender of interest here is expressed throughout the language of Clarissa, but their expression of ideational meaning, their representation of reality, is central and demands most attention. In their representation of the roles typically open to men and women and of the personal characteristics that matter in relationships, relational (especially attributive) processes and mental processes are particularly important. Lovelace frequently points to attributes of women which dispose them to act in particular ways; at the same time, he claims men have a much wider scope of activity available to them, and the grammar of some of his reflections betrays a relation between these meanings: many supposed 'female' attributes result from the activities of men, or from activity in which men have the power to dominate women. Clarissa notes that women have a very limited scope of activity in relations with men and she notes that in these activities women are often dominated by men; consequently she claims that women's affections must be subject to their powers of judgement, and that women must scrutinize men carefully and prefer certain kinds of men to others.

In Halliday's characterization, transitivity concerns extension: 'The Actor [in material process clauses] is engaged in a process; does the process extend beyond the Actor, to some other entity, or not?' (Halliday, 1985: p. 145) Analysis in terms of transitivity therefore suggests questions such as 'what are the attributes of typical men and women?' and 'what do men and women typically do?' Halliday also suggests that the transitivity pattern tells only part of the story and may usefully be supplemented by analysis in terms of ergativity. The ergative pattern in the clause concerns causation: 'Some participant is engaged in a process; is the process brought about by that participant, or by some other entity?' (Halliday, 1985: p. 145) Ergativity analysis therefore suggests such questions as 'are the attributes of men and women intrinsic, or are they given them?' and 'do men/women cause the processes in which they are involved?' In an analysis of the reflections of Clarissa and Lovelace, more than one grammatical question is appropriate and a combination of transitivity and ergativity perspectives is needed to characterize their combined grammar of gender: 'what do men typically do?' and also 'what, typically, happens to women?'

Lovelace's reflections on women express typical 'female' attributes and activities through various grammatical patterns, all to the same effect. Cunning and readiness to deceive men may be realized through an attitudinal epithet (possibly intensified) in the structure of a nominal group expounding Attribute in a Relational: attributive: intensive process, as in

'This is a confounded sly sex' (414); it can also be realized through the selection of Head in a nominal group functioning at Qualifier in a nominal group expounding Value in a Relational: identifying: intensive process, for instance in Lovelace's partial statement of his sexual semiotic: 'Sparkling eyes . . . are an infallible sign of a rogue, or room for a rogue, in the heart.' (633)

As 'sly little rogues' women may undertake a variety of processes -- in the following passage, behavioural ('lie'), mental ('think') and material ('spring', 'make', 'speak', 'laid out', 'draw in'):

Then these sly little rogues, how they lie couchant, ready to spring upon us harmless fellows the moment we are in their reach! -- When the ice is broken for them, how swiftly can they make to port! -- Meantime, the subject they can least speak to, they most think of. Nor can you talk of the ceremony before they have laid out in their minds how it is all to be -- Little saucy-face designers! how first they draw themselves in, then us! (671)

In the two instances in this passage in which women as Actors engage in processes involving men, the men are in the role of Goal and are characterized as helpless victims of deception, as 'us harmless fellows' or simply 'us'. In another reflection, a marked Theme expounded by a prepositional phrase framed to include men at all times of life lends textual significance in an extreme version of this meaning: 'A cursed deluding sex! -- In youth, in middle age, or dotage, they take us all in.' (696) Yet despite their deviousness, women may deceive themselves as well-- 'first they draw themselves in, then us!' (671) and they are disposed to 'prefer a rake to a sober man' (802). This meaning can be made without the nominal groups expounding the roles women fill necessarily being pejorative: 'Yet, sweet dears, half the female world ready to run away with a rake, because he is a rake; and for no other reason; nay, every other reason against their choice.' (703) The 'sweet dears' expounding a marked Theme in this passage has a mocking, almost misogynistic tone, and the expression of a related 'levelling' attitude can include another lexical item ('charming') more often used in texts of the period to express admiration of women:

the charmingest woman on earth, were she an empress, can excel the meanest, in the customary visibles only. Such is the equality of the dispensation, to the prince and the peasant, in this prime gift, WOMAN. (493)

The final nominal group complex ('this prime gift, WOMAN') expounds another 'female' role typical of Lovelace's reflections, that of Goal in a Material process. No Actor is made explicit in this 'dispensation' (if one was it would probably be a patriarchal God!) but the Beneficiary of the process is expounded

by a compound nominal group framed to include all men, 'the prince and the peasant'.

Lovelace does at times imagine women acting effectively to protect themselves in relations with men -- 'I see that a truly modest woman may make even a confident man keep his distance' (664) -- but elsewhere he contends that such action may increase their danger: 'a suspicious temper is a punishable temper. If a lady suspects a rogue in an honest man, is it not enough to make the honest man who knows it, a rogue?' (569) Women may be Agents, causers of processes in which they are involved, and still suffer; even 'modesty' is no guarantee a woman can remain 'unaffected' by men, or that she will not connive at her own seduction in activity undertaken mutually:

She must be an abandoned woman, who will not shrink as a snail into its shell, at a gross and sudden attempt. A modest woman must be naturally cold, reserved, and shy. She cannot be so much and so soon affected as libertines are apt to imagine; she must, at least, have some confidence in the honour and silence of a man, before desire can possibly put forth in her, to encourage and meet his flame. (717)

Some women may not be easily seduced and may seem outside the scope of the grammar Lovelace proposes, but two reflections made with existential process clauses exempt none of them from it: 'But there may be consent in struggle; there may be yielding in resistance' (557) and '. . . there is in every woman a yielding, or a weak-resisting moment to be met with . . .' (971-972). Not surprisingly, Lovelace frames the second of these as a projection of the women who have encouraged him to ruin Clarissa!

In two instances when he relies on other authorities to explain why women's nature and social situation should be as they are, Lovelace cites literary and biblical precedents. The literary reference suggests the Cavalier ethos of the Restoration court:

The gentle Waller says, Women are born to be controlled. Gentle as he was, he knew that. A tyrant-husband makes a dutiful wife. And why do the sex love rakes, but because they know how to direct their uncertain wills, and manage them? (670)

Here the 'tyrant-husband' is Agent (in transitivity terms, Attributor) in a Relational: attributive process in which the kind of woman such husbands find desirable is Medium (in transitivity terms, 'wife' is Carrier of the Attribute 'dutiful'). Men's larger scope for activity, 'to direct their uncertain wills, and manage them', is cited as a reason why 'the sex love rakes'. In the biblical reference, women's inferior power is justified by the Fall, which Lovelace chooses to express through a clause in which women are Medium ('The sex is made to bear pain'), through two clauses in which the first woman as Actor has victimized

other women and all people ('It is a curse which the first of it entailed upon all her succeeding daughters, when she brought the curse upon us all') and another clause in which women are perverse Sensors in a Mental: affect process ('And they love those best, whether man or child, who give them most.') (1069)

Lovelace often presents female attributes as if they determine female behaviour independently of any activity by men, but a comparison of three short reflections suggests another interpretation. In one of them, he makes 'a bad woman' Carrier in a Relational: attributive: intensive process with the Attribute expounded by a comparison that seems to exonerate her counterpart, 'a bad man': 'A bad woman is . . . more terrible to her own sex, than even a bad man.' (935) Elsewhere, the same process, with much the same exponents of Carrier and Attribute, includes, in a hypotactic temporal enhancement, man in his now familiar role as Actor in a Material process with woman as Goal: '. . . what devils are women, when all tests are got over, and we have completely ruined them!' (675) In yet another reflection, this female attribute is expressed not as an invitation to male activity, but as the result of it: 'After all, what devils may one make of the sex!' (729)

Clarissa's grammar of gender shares many features with Lovelace's, and although her attitude is different the situation she describes is much the same. Women's scope for activity in relations with men is extremely limited, as may be seen in a reflection on 'the space from sixteen to twenty-one':

For in that period do we not generally attract the eyes of the other sex, and become the subject of their addresses, and not seldom of their attempts? And is not that the period in which our conduct or misconduct gives us a reputation or disreputation that almost inseparably accompanies us throughout our whole future lives? Are we not then most in danger from ourselves, because of the distinction with which we are apt to behold particulars of that sex? (480)

Women may be filling the role of Agent in some instances here, but careful examination suggests that these cases may admit of other interpretation. The nominal group 'we' is Phenomenon/Agent in a Mental: affect process with 'the eyes of the other sex' as Sensor/Medium, and it is Token/Agent in a Relational: identifying: intensive process with 'the subject of their addresses, and not seldom of their attempts' as Value/Medium; but in the first of these women cannot choose not to cause a male reaction, and in a non-metaphorical coding of the second, without male activity nominalized, women would be Medium in processes ('address', 'attempt') with men as Agents. Despite the limitations these roles suggest, despite the dangers to which 'attracting' men exposes them, women are nonetheless held responsible for what happens to them: 'our conduct or misconduct' is Actor in a self-directed Material process ('give') in which 'a reputation or disreputation' is Goal and 'us' is Beneficiary: recipient. The

tendencies these patterns suggest are widespread in Clarissa's reflections as well as in Lovelace's; women are indeed 'in danger from ourselves'.

Although their scope for activity is limited, even in the exercise of activities they are permitted (mostly mental processes of cognition and affection, involving the assessment and approval or rejection of men) women may be constrained by familial or social pressures, or dominated by men in any case:

How one step brings on another with this encroaching sex!
How soon may a young creature who gives a man the least encouragement be carried beyond her intention, and out of her power! (345)

. . . when once a woman embarks with this sex, there is no receding. One concession is but the prelude to another with them. (525)

As in Lovelace's reflections, men are able to assign meanings to women's actions ('And do not the bold sex take silence for a mark of favour?' 423); and by promises or flattery they can give women attributes disposing them to seduction: 'But what will not these men say to obtain belief, and a power over one?' (171); 'Such language looks always to me as if the flatterer thought to find the woman a fool, or hoped to make her one.' (296)

What Lovelace claims are consequences of female nature, Clarissa expresses as the results of women's restricted scope of activity in relation to men. She recognizes a social basis for these limitations, and it is clear in some of her reflections that women's position is socially constructed:

who ever knew a brave man, if a man of sense, an universally base man? And how much the gentleness of sex, and the manner of our training-up and education, make us need the protection of the brave, and the countenance of the generous, let the general approbation which we are all so naturally inclined to give to men of that character, testify. (182-183)

Within the long embedded clause ('how much . . . the generous') functioning as marked Theme, there is a Relational: identifying: possessive process (possession encoded as process, 'need') with women in the role of Token, and a nominal group complex made up of nominalized male activity ('the protection of the brave, and the countenance of the generous') in the role of Value. Although in ergative terms Value is Medium and Token is Agent, there is a secondary Agent (in transitivity terms, an Assigner) in this process, and it is expounded by another nominal group complex, one which proceeds by a paratactic extension from a biological statement ('the gentleness of sex') to processes in which women are Medium, or, less technically, cultural products ('the manner of our training-up and education'). In the rest of this sentence, Clarissa grounds her observation, as she frequently does, on

'nature', but one finds on analysis that this 'nature' is far from being obvious or 'natural'. Her initial 'how much', a circumstantial expression of manner: quality, begs a question that comes to light when we consider the function of the whole passage so far analyzed ('how much . . . the generous'), which is an embedded fact in the role of Value in a Relational: identifying process with an additional feature of agency, what Halliday calls a 'caused modality' (Halliday, 1985: 153, 244). The other nominal group ('the approbation . . . men of that character') expounds Token/Agent, and since women are being accorded agency it is worth analyzing the processes in this group further. It involves definition of women by their 'inclination', and by grammatical metaphor a Material process ('give') with women ('we . . . all') as Actor, 'general approbation' as Goal and 'men of that character' (that is, brave men) as Beneficiary: recipient expresses what could be realized (congruently) as a Mental: affect process encoded from Senser (women) to Phenomenon (brave men). Not surprisingly, one of Lovelace's reflections makes this meaning: 'Women love brave men.' (866)

Although she recognizes much the same situation as Lovelace, Clarissa is able to imagine more than the female ruin, frigid rejection, or persistent antagonism in marriage Lovelace allows as options in relations between men and women. Positively, Clarissa imagines women using their powers of judgement to value characteristics that indicate a man can be trusted: 'the heart is what we women should judge by in the choice we make, as the best security for the party's good behaviour in every relation of life.' (181) Elsewhere, she presents a positive alternative to the male deception that so often follows a woman showing favour:

I never see a modest man, but I am sure . . . that he has a treasure in his mind which requires nothing but the key of encouragement to unlock it, to make him shine Oh my dear, shall not a modest woman distinguish and wish to consort with a modest man? -- a man before whom and to whom she may open her lips secure of his good opinion of all she says, and of his just and polite regard for her judgement? and who must therefore inspire her with an agreeable confidence. (481-482)

Woman's scope of activity is considerably wider here than in most reflections on gender: she may be Actor/Agent in processes with men as Goal/Medium, and she is neither a victim nor a tyrannical shrew. Unfortunately, this possibility does not exist for Clarissa herself. In many instances, interaction in the novel contradicts the grammar of gender realized in reflections: Lovelace is not the all-conquering seducer he wishes to be, and Clarissa, because she remains true to herself, exerts real, if limited power over what happens to her. But the price of this power is death; as Clarissa exclaims in a confrontation with Lovelace, 'The person that fears not death is not to be

intimidated into a meanness unworthy of her heart and principles!' (940) The unexpected pronoun concord ('her' with antecedent 'person') suggests she is thinking particularly of herself, yet at the same time it foregrounds a different definition of woman and opens up a possibility of overcoming male dominance. This possibility is pessimistic because the novel is a tragedy; no doubt the mode accurately reflects women's position in eighteenth-century England.

If the grammar of gender sketched in this essay offers a valid picture of the ways in which men and women imagined themselves in eighteenth-century England, what social factors might account for it? Obviously, women's inferior legal and social status made it more likely that commonplace assumptions would assign them limited power to determine what they could do and be and know. Although mental processes are important in Richardson's version of an epistolary novel concerned with love, one of the reasons why eighteenth-century English stories about women are so often stories of 'love and seduction' is that these themes and the mental processes associated with them are taken to form a realm of distinctively feminine experience. Since social practice in England and related countries has changed, we may expect language, sooner or later, to change (perhaps through being changed) in resonance with it. Less obviously, agency and the power to cause the processes one is involved in may be a crucial issue in Richardson's reflections on gender because, like Thomas Hobbes, he had a shrewd understanding of the English economic situation. As C. B. Macpherson has shown (Macpherson 1962), Hobbes' central insight was that people living in a possessive market society, where they possess their labour and sell it in the marketplace, can be powerful only to the extent that their power exceeds the power of others, and as a consequence they are necessarily engaged in a ceaseless struggle not just to maintain, but to extend their power. If this is the case, we might question how far we have moved from Richardson's assumptions: linguists studying ideology in discourse will need a grammar of transitivity and ergativity for some time.

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MISCONCEPTIONS OF LANGUAGE IN CURRENT LITERARY CRITICISM

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In the last two decades, there has arisen a movement in literary criticism, based on a 'radical skepticism concerning language' and known as DECONSTRUCTION, exemplified first of all in the works of the Parisian philosopher Jacques Derrida (1967 and many later works) and later in those of his followers and exegetes.¹ The deconstructionist movement has been especially strong in certain North American universities, where it has persisted even after going out of style in France,² and where it has become, like transformational-generative grammar in linguistics, a weapon in academic power-politics.³ Derrida's and others' 'radical skepticism concerning language' is, however, completely devoid of foundation, as I have pointed out elsewhere (Hall [1985]), since it disregards certain elementary facts of human language-behavior. Yet neither the proponents of 'deconstruction' nor, in many instances, their critics in the literary field, take these elementary facts into consideration. It is my purpose here to enumerate them and to discuss briefly their relevance to the study and analysis of literature, as well as the sources of these prevalent misconceptions.

1. RELEVANT BASIC FACTS CONCERNING LANGUAGE. There are five basic points concerning the nature of human language which are, or should be, known to everyone who deals with any aspect of its use.

1.1. All normal linguistic communication is primarily oral and auditory,⁴ including all written material. This point is not as widely known as it should be, even to workers in linguistics. I have attempted elsewhere (Hall [1975]) to reconcile the two points of view which maintain, respectively, that writing is co-equal with speech and that it is subordinate thereto. A fundamental fact of the relation between writing and speech is that every time one reads or writes, even 'silently', there are nerve-impulses for speech sent out from the brain, which are then inhibited on the

muscular level, as has been conclusively demonstrated by experimental psychologists.⁵ This is very important for our understanding of the relation between speech and writing, in literature as well as in every-day life.

1.2. Communication by means of language is not bipartite, involving a 'signifier' and a 'signified'. This very wide-spread binary opposition, going back to mediaeval grammarians' distinctions between *SIGNANS* and *SIGNATUM*, is invalid. Linguistic communication is tripartite, involving a relationship between a sequence of sounds (a *LINGUISTIC FORM*) and what it refers to (its *REFERENT*), which is mediated by an associative tie between the two (its *SENSE*).⁶

1.3. This associative tie, the sense of a linguistic form, exists only in the brain and central nervous system of each speaker/hearer, and is inevitably slightly different (though usually only slightly) from each user of the language to the next, depending on the totality of each person's experience. This is why, as Bloomfield (1933: ch. 9) pointed out and I have never tired of emphasizing (from Hall [1972] to [1987]), meaning cannot be studied or formulated as completely or as exactly as other aspects of human language-activity.

1.4. The basic function of any language is to serve as a communicative code among the persons who use it, i.e. in its speech-community. This constitutes, of course, the social aspect of language. We therefore cannot neglect either the individual or the social side of language-use in favor of the other.

1.5. The process of communication by means of language is, schematically speaking, as follows: the hearing of a linguistic form arouses, inside the hearer or reader, an associative tie similar to that existing inside the speaker. (N.B.: *SIMILAR*, not *IDENTICAL*; since no two persons, even twins, are ever absolutely identical, the forms and their senses can never be more than closely similar.) In this way, the hearing (or reading) of a linguistic form *EVOKES* the hearing or imagining of a referent.

In this connection we need to realize that a work of art whose medium is language is fundamentally different from one in a visual medium such as painting or sculpture, or acted drama. In these, there is true imitation of phenomena which are observable to our senses in real life. In any work of literature, however — whether purely oral⁸ or also written — there is no imitation or 'mimesis.' This is true of even the most 'realistic' description, which, in the very nature of linguistic communication, cannot even begin to hint at all the perceptions which any given individual may have, all at once, in a given situation. In any kind of literature, what happens is, rather, that its originator perceives (either in real life or in his or her imagination), certain phenomena which he or she then reports on in a sequence of linguistic forms with their

meanings.⁸ The hearer or reader is thereby stimulated to imagine in his or her 'mind' (however we define that term) something similar (never identical) to the images the author had in his or her 'mind'.

2. NEGLECT OF BASIC FACTS IN CURRENT LITERARY THEORY.

2.1. Much of current literary theory, especially 'deconstructionism,' has not only neglected but more or less intentionally flown in the face of these basic facts of language. Of the various current errors of the Derridians and the 'Telquéliens,' the most gross and elementary is their assertion of the absolute priority of writing over speech. Such a notion is obviously unrealistic, for a number of reasons: the manifestly earlier origin of speech in both human history and the linguistic development of each individual speaker; the universal presence of speech in every human community, as opposed to the relatively lesser extension of writing; and the presence of (inhibited) speech-impulses every time we read or write, as already mentioned. Derrida (1967) uses *écriture* 'writing' in an ambiguous fashion, until he casually gives the show away by admitting (p. 65) that he is treating any sign as an 'écriture'.¹⁰ Hence the quite 'unjustifiable extension, in current 'lit. crit.', of such terms as *scriptible* in the sense of 'usable as a symbol', *lisible* 'interpretable', or *inscrire* simply 'to incorporate'. Not only the 'man in the street,' but many literary critics, see nothing wrong with such a view of writing in relation to language. In our culture it is widely, though mistakenly, believed that 'written language' is on the same plane as 'spoken language' in nature and function. Hence, when a naïve member of the speech-community is told 'writing is prior to speech,' his or her reaction is likely to be 'after all, why not?'.

2.2. The only linguistic theory to which the 'Telquéliens' and 'deconstructionists' pay any serious attention is that set forth in the *Cours de linguistique générale* (1916) ascribed to the Genevan linguist Ferdinand de Saussure, but actually concocted after his death by three of his students (Bally, Sechehaye and Riedlinger) out of their own and others' lecture-notes. On the one hand, the *Cours* has certainly exerted a greater influence on European thought than any other single work on linguistics. On the other hand, it can legitimately be doubted whether its influence has been wholly beneficial. A number of the concepts and dichotomies set forth in the *Cours* are not only questionable, but downright harmful, such as the oppositions between *langue* and *parole*, between 'synchronic' and 'diachronic', and between 'paradigmatic' and 'syntagmatic'; and the notion of the 'linguistic sign'.

With regard to the last-mentioned, the pseudo-Saussure of the *Cours* continues the mediaeval, Renaissance, and Cartesian dichotomy of the 'signifier' and the 'signified'. As suggested above (§1.2), this opposition is untenable, because it leaves out of consideration the *locus existendi* of the correlation between a linguistic

form and its referent, namely the 'mind' (or simply the human brain, if you prefer) of each individual speaker. As for the definition of the term LINGUISTIC SIGN, the Cours is unclear — a phenomenon which, like many other aspects of 'Saussurean' theory, has caused quantities of ink to flow.

2.3. One error, however, which is found in current 'lit. crit.', goes beyond and distorts 'Saussurean' theory, by merging the 'signifier' and the 'signified' together in the concept of the linguistic sign, and then taking Saussure's doctrine of *l'arbitraire du signe* to imply that the linguistic sign (as re-defined) has no reference to non-linguistic phenomena. When Saussure spoke of the 'sign' (in his sense) as being arbitrary, he meant simply what is generally known, that there is no *a priori* causal relation between the 'signifier' and the 'signified'. But if we merge signifier and signified, linguistic form and referent, into the concept of the linguistic sign, we come to the weird notion that the ensemble of linguistic signs which we subsume under the heading of a language contains its referents within itself, and hence is purely arbitrary, therefore meaningless, with no reference to the world in which we live. This notion is often called the 'self-referentiality of language.' As Gerald Graff (1979) and others have pointed out, it is perfectly true that there is some cross-reference between elements of linguistic structure. But this does not justify anyone's saying that language refers only to itself.

Such a view disregards totally the nature and function of language, which is that of communication between members of a speech-community. Each speaker has a set of meaningful sequences of sounds (i.e. linguistic forms), which are correlated, in his or her 'mind', with phenomena of every-day existence and experience. By using these forms so that other speakers hear them (in actual sound or in sound imagined as they read), the users of a language 'convey meanings', i.e. arouse similar correlations in their hearers, and thereby set off one or another kind of real-life event. (It is beside the point, in this connection, to query the 'ultimate reality' of our experiences and actions; we all act 'as if' they are real,¹¹ which is all that matters in this context.) Language has a real-life function, with real-life correlations and references, and it is stupid to say that language is 'non-referential.'

2.4. Yet the 'deconstructionists' carry this silly notion one step farther, to justify the literary critic's placing on a text any interpretation that he desires, no matter how wild or unsupported by the attested linguistic facts. Is any given element that he or she wishes to 'inscribe' (!) into a text not there? No matter; it is perfectly permissible to discuss the text as if it were there.¹² Such a procedure is often justified with the ridiculous slogan 'the absence is the presence' (!). Has the critic misquoted a text and used the misquotation as justification for far-fetched theories and interpretations? Again, no matter; it is the interpretation, however wild or unfounded it may be,¹³ that counts,

in such an approach, without regard to what the author actually said in the text, or any relation of his words to real life or ordinary human experience. It is easy to see that such an approach can lead only to irresponsible solipsistic ego-trips on the part of the critic, and to disregard of the legitimate function of literary criticism, which is to make a text more comprehensible and more accessible to the reader.

3. SOURCES OF MISCONCEPTIONS. Where should such fantastic misconceptions have come from? There are at least three possible explanations:

3.1. Virtually the only source of knowledge of linguistics that any of these critics have is the pseudo-Saussurean *Cours* of 1916 — as distorted by Roman Jakobson (with his over-emphasis on binary oppositions) and further misunderstood by Claude Levi-Strauss. There has arisen a kind of *Vulgärsaussureanismus*, in which all the least tenable doctrines of the *Cours* are merged. I have no hesitation in saying that it is time to *ridimensionare*, as one would say in Italian, to 'cut down to size', the exaggerated importance of the 1916 *Cours* and the notion of Saussure as the 'founder of modern linguistics.' There has been no one scholar to whom that title could be awarded, and none can be regarded as even *primus inter pares*. The most one can say is that not even our favorite nominee for that position was more than *par inter primos*.

3.2. Other and better sources of knowledge concerning language, which are definitely more important than the pseudo-Saussurean *Cours*, have been almost wholly neglected; primarily because the Parisian critics (and hence their imitators) knew only Saussure. I need mention only such leading works as Whitney (1875 — still a very valuable and insightful book); Sapir (1921); Jespersen (1922); Bloomfield (1933); Hockett (1958); and Pike (1960). For the relation of speech and writing in literature, consult especially Ong (1983) and Havelock (1986). Unfortunately, these works seem to have been unknown, not only to the 'Telquéliens' and their followers, but also to their opponents. Of five of the major critiques of current literary theory (Graff [1979]; Felperin [1985]; Fischer [1985]; Scholes [1985]; Thurley [1985]), none discusses any linguist except Saussure, and only Scholes takes up the problem of the use of language in literature in a separate section of his book (Chapter 6, 'Reference and Difference').

3.3. But how could these aberrations which we have been discussing ever have arisen? The underlying situation which permitted these developments seems to me to involve at least three factors. Before the 1960's, scholars in literature had little or no inkling of the desirability of some kind of method for their studies. Very few had any idea of the findings of linguistics, Saussurean or any other. The unfortunate separation of approach — and, in many instances, mutual hostility — between scholars in literature and those in linguistics led to each side's being unaware of develop-

ments in the other's field. (Many linguists whom I have told of current developments in literary theory have expressed both ignorance of modern 'lit. crit.' and amazement at literary critics' lack of knowledge concerning language.)

In this situation, naïve and ignorant *littérateurs* were easy marks for a specious, superficially attractive doctrine emanating from a great European city with immense cultural prestige, where (it has been well said¹⁴) there is always an *avant-garde* and the public always has to have *la querelle* of this, that, or the other. 'Deconstruction' seemed to offer a method, thus filling a void whose existence was gradually coming to be recognized. It has often and rightly been said that theory predominates in current study of literature. That the house of theory which has thus been set up is built on sand, as it were, has not been realized because so few scholars in literature have any knowledge at all of the real nature and functioning of language. Yet, if we want to discuss the rôle — and it is a fundamental one — of language in literature, it is a good idea for us as scholars in literature to know the facts of language as they really are, and for us as workers in linguistics to call our purely literary colleagues' attention to reliable sources such as those I have mentioned — Whitney, Jespersen, Sapir, Bloomfield, Hockett, Pike, and Ong.

NOTES

1. Especially the Parisian group centred around the magazine *Tel quel* (the 'Telquéliens'), such as the late Roland Barthes, Julia Kristeva, and (for a time) Tzvetan Todorov; and, among English-language discussants, especially Culler (1982).

2. Cf. Watson (1982), comparing 'La Nouvelle Critique' (including the doctrines of the Telquéliens and deconstructionism) to a dinosaur, sinking out of sight in its home-land through being swallowed up in the mire because of its own weight and its inability to move.

3. Cf. my observations in Hall (1982) à propos of Newmeyer (1980).

4. Visually perceived 'gesture-language' does not basically constitute an exception to this statement, since, as is well known (cf., among earlier discussants, especially Sapir [1921:20-21]), such systems are based on oral-auditory linguistic structures.

5. The classical reference on this point is Edfeldt (1960).

6. As pointed out, for instance, by Ogden and Richards (1923:14), Ullmann (1951, 1962), and Posner (1970).

7. Cf. my more detailed discussion of this point in Hall (1979, 1980).

8. Let us not quibble over the alleged contradiction between the terms ORAL and LITERATURE, as does, for instances, Ong (1983: 13-14). We can perfectly easily define the latter term as meaning

simply 'memorable discourse', as I suggested in Hall (1979), without reference to the historical derivation of the term. (We do not insist that, every time someone uses the term ACCUSATIVE, an accusation is being made.)

9. This is true even in fantasy and science-fiction, where completely non-existent phenomena are conjured up, first in the author's imagination and then in the reader's.

10. Cf. my discussion in Hall (1985). It has been well said (Ong 1983:94): 'Taking the term "writing" in this extended sense to include any semiotic marking trivializes its meaning.'

11. Cf. especially Vaihinger (1925).

12. One of the worst recent examples of this type of distortion is the discussion of Dante's *Divine Comedy* in Mazzotta (1979); cf. the severe but well-deserved animadversions of Quiñones (1981).

13. A paradigmatic example of the worst excesses of this approach is the discussion, by A. Grossvogel (1980), of a passage in Carlo Emilio Gadda's *Cognizione del dolore*. Mrs. G. cites (141) a passage from Gadda's text including the three irregularly-spelled French nouns *choux*, *bijoux*, *cailloux*, and then proceeds, for the rest of the article, to misquote these three words repeatedly as *choux*, *hiboux*, *cailloux*, and to base a wild, fantastic psychoanalytic interpretation of Gadda's novel on these three words as she has misquoted them.

14. Prof. Peter Dembowski (p.c.).

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RELATIONAL PROPOSITIONS WITHIN THE CLAUSE

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For many years, text analysts have struggled with the need to analyze and display graphically the organization and structure-signaling devices of natural text. The task has proved an exceptionally difficult one, but there does appear to be a growing consensus regarding both the nature of textual cohesion and also many of the specifics. The major items of consensus appear to be:

- (a) that text is organized by a relatively small number of "relations" or "rhetorical predicates" or "relational propositions" which exist between parts of the text;
- (b) that the relations are essentially binary and apply at all levels of text from the clause to text macro-structures;
- (c) that textual complexity occurs as a result of complicated groupings and combinations of relations;
- (d) that parts of text of various length are related in this way; and
- (e) that the relations are often signaled in some way but can be unsigaled.

Recent work by Martin (1983), Mann and Thompson (1987) and Grosz and Sidner (1986), although approaching the subject with quite different perspectives, provides advances which bring us closer to a common understanding of textual cohesion. Intended as a contribution to this understanding, this paper builds on the established consensus to extend analysis into the semantics of the clause.

BACKGROUND

As with most work in text analysis, the approach outlined here has its roots in Longacre's rhetorical calculus analysis of New Guinea languages (1972) and his later work, and in the biblical translation study of Beekman and Callow (1974). This latter work not only identifies several relations between clauses and sentences, but also shows them graphically as they unite ideas into a "text". The need to "see" the relations, their combinations, and related signals in graphic rather than tabular or schematic form has done much to form the method discussed here.

Based to some extent on the earlier work of Longacre and of Beekman and Callow (with influence from Grimes (1975) and others),

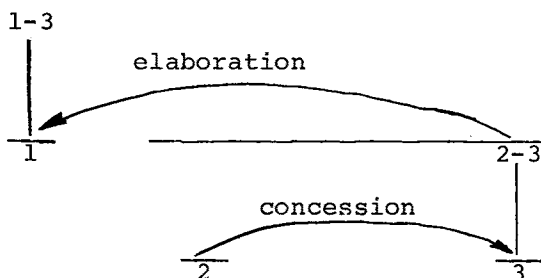
Mann and Thompson and, in a less developed way, Grosz and Sidner (1986) have respectively developed a rhetorical structure theory and a discourse structure to explain many features of textual cohesion. Mann and Thompson's work over several years has identified useful principles of nuclearity, overlapping and parallelity, and has more clearly defined some of the relations. Their approach, though highly illuminating, is somewhat restricted by their aim: "We are interested ...in the rhetorical organization of such texts from the highest level down to the level of the clause." (1987, p. 46)

The approach taken here is that, to fully understand text, we must go below the level of the clause in many instances. A comparison of analyses of a brief example will show the difference in approach:

(1) Dioxin

(1)Concern that this material is harmful to health or the environment may be misplaced. (2)Although it is toxic to certain animals, (3)evidence is lacking that it has any serious long-term effect on human beings. (Scientific American abstract - from Mann and Thompson, 1987, p. 13)

The analysis provided by Mann and Thompson (1987, p. 15) is:



Although clearly useful and defensible, this analysis could be made more complete by the addition of the following information:

- (a) the lexical/pronominal system of continuity discussed, for example, as Halliday and Hasan's "ties" (1976) or by Jordan's (1984a) explanation of the genre of description,
- (b) recognition of semantic relations within the clauses as well as between them (e.g. between the subject and predicate of the first sentence),
- (c) identification of "deleted" or implicit information and relations in the text, and
- (d) a clearer indication of the thesis-concession-rebuttal (Jordan 1978) structure of the text.

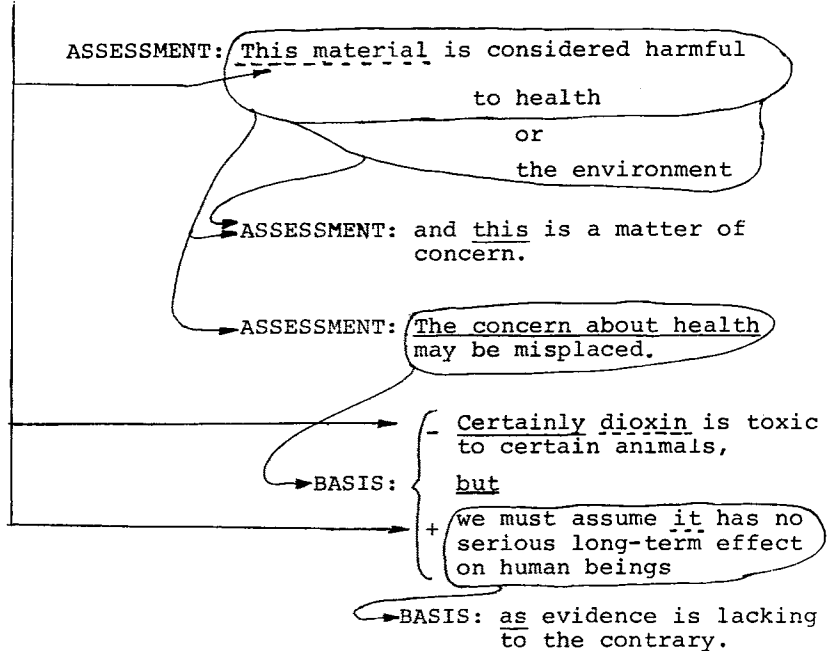
DETAILED ANALYSIS

Following Van Dijk's point (1973) that any complex sentence can be paraphrased by a set of simple sentences, we can rewrite this example in a more marked way to determine and clarify the relations present:

"Dioxin. This material is considered harmful to health or the environment and this is a matter of concern. The concern about health may be misplaced. Certainly dioxin is toxic to certain animals, but we must assume it has no serious long-term effect on human beings as evidence is lacking to the contrary."

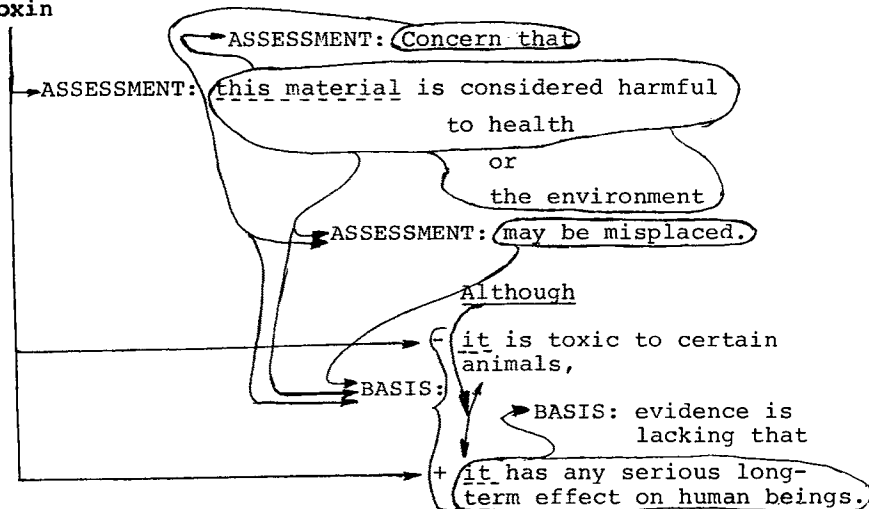
Now we can see the types and complications of relations in the text, and we can recognize the meaning of the text in a much clearer way. We can see that the two concerns expressed (health and environment) are not both addressed by the discussion, and the validity of the we-don't-know-it-does-so-we-assume-it-doesn't argument becomes more accessible for examination. A full analysis should include all this additional information as well as that presented by Mann and Thompson. First here is an analysis both describing and illustrating the meanings and relations of the re-written text:

Dioxin



Now we can see the topic continuity (by the generic material, the repetition dioxin, and the substitution it), the organization of the various assessments and their bases, and the different concerns as inputs to two of the assessments. The signals indicating the relations and transitions are also clearly indicated, and readers can easily see the meanings and relations of the text. Although it is often helpful to paraphrase texts and then analyze them before analyzing the original texts, this is not an essential step and has been done here for explanatory purposes only. Here is a similar analysis of the original text, showing the same information for the more condensed version.

Dioxin



This approach indicates not just the relations and their combinations, but also exactly what parts of the text are being entered into the relation. The material dioxin is assessed, and that assessment is further assessed as causing concern. The input to the third assessment (note the two arrows) is Concern that this material is considered harmful to health, which is assessed as the hypothetical may be misplaced. The basis (= evidence, reasoning, justification, grounds) for the third assessment is given in the concession-rebuttal pair mediated by Although. The input for this basis relation has three parts making "concern that this material is considered harmful to health may be misplaced". In question terms, the question asked at the major basis relation of this text is "What is the basis for the view that the concern that this material is considered harmful to health may be misplaced?" and this question is answered with apparently contrary evidence followed by a statement signaled as positive grounds for the "misplaced" assessment.

This complete abstract is open to question, both because the concession-rebuttal fails to address the environmental concern and because of the form of argument used. While the linguist may

not wish to be concerned with the veracity of statements or the validity of arguments, it is clearly of linguistic concern to explain the information presented and the relations in the text - as a sound basis for judging the text.

USING MEDIATING QUESTIONS

To identify a single clause relation, we need:

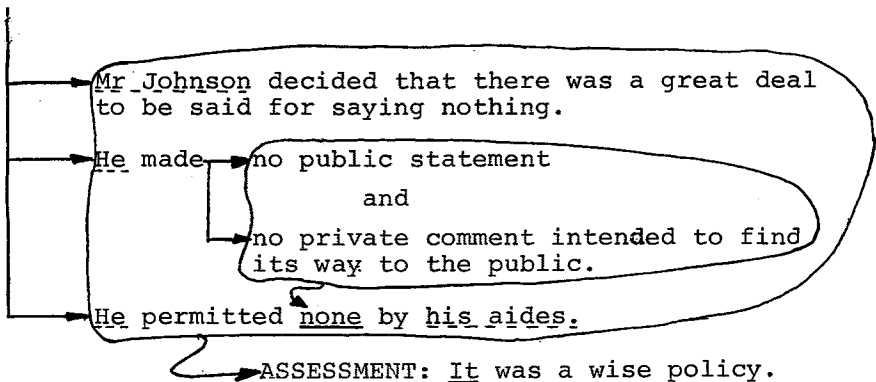
- (a) to determine the part or parts of the text (clausal, nominal, or other parts) which start the relation;
- (b) to recognize the part of the text with which the first part is semantically connected; and
- (c) to classify the relationship between them.

Mediating questions, such as the one given above for Example 1, are a precise means of achieving parts (a) and (b), and to a lesser extent also part (c).

Unlike other linguists, Winter has never felt confined to single-item identifications for the relations, and has relied largely on the use of complex mediating questions to identify the first part of the relation and the type of relation. Many of Winter's complex questions, however, are elaborations of single-item relation indicators (such as assessment, elaborate, result). Here is an example, where three sentences form the input to the clause-relating question:

- (2) Mr Johnson decided that there was a great deal to be said for saying nothing. He made no public statement and no private comment intended to find its way to the public. He permitted none by his aides. It was a wise policy. (Daily Telegraph, 17 Apr 67, p. 14 - from Winter, 1982, p. 142)

The mediating question for the evaluation of the final sentence is given as: "What do you think of Mr Johnson's policy (towards the Kennedy affair) as it is reflected in his decisions and their implementation by himself and his staff?" This is clearly consistent with:



which shows nominal continuity and the negative substitution as well as the relation of assessment.

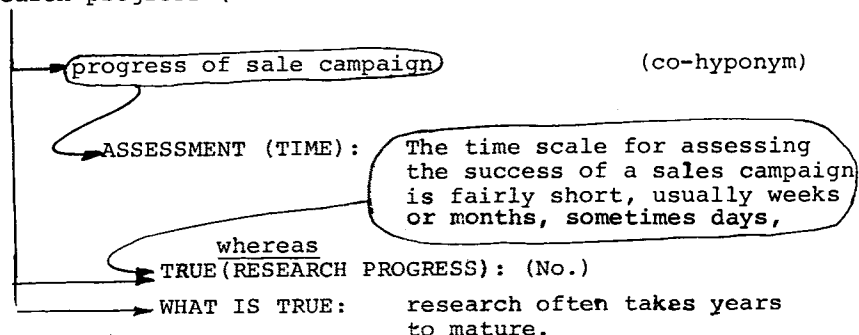
The prochunk *It* in this example substitutes for all the previous three sentences and enters them into the relation of assessment answered by the final sentence. Jordan's (1978) analysis of such uses of sole nominals in text illustrates their pivotal use in text continuity with mediating questions such as "What do you think of this?" and Hoey discusses the full cline from Winter's complete questions to Beekman and Callow's single item indications in terms of "broad" and "narrow" questions (1983, pp. 28-29). There is no inconsistency in any of this - just different ways of expressing commonly-understood principles of textual cohesion.

Difficulty in applying Winter's question technique to single item relations occurs when new lexis is introduced by the question, as for the following example:

- (3) The time scale for assessing the success of a sales campaign is fairly short, usually weeks or months, sometimes days, whereas research often takes years to mature. (New Scientist 8 Dec 66, p. 586 - from Winter 1982, p. 105)

Winter identifies the relationship between the two clauses in terms of the complex question: "How does the time scale for assessing the sales campaign compare with ... the time scale for assessing research progress?" This technique is exceptionally clear, but is difficult to draw and even more difficult to explain in detailed terms compatible with established single-item relations in text because it introduces the new lexis sales campaign. Example 3 illustrates what Winter has called a matching relation as it matches information about one topic with information about another; in this case it is comparative denial as what is true for research progress is not true for the progress of sales campaigns. Here is a diagrammatic analysis which relies on the introduction of the co-hyponym as the basis for the comparison:

research progress (from earlier in text)



This analysis is consistent with Winter's analysis of comparative denial (1974) and Jordan's analysis (1978) of texts with overt denials (e.g. "This is not true for ...") followed by details of what is true. This tightly connected group of relations has been called "collateral inversion" by Grimes (1975).

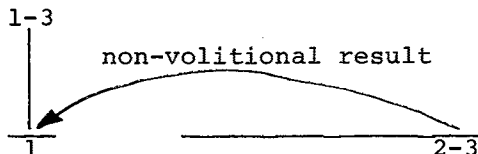
WITHIN AS WELL AS BEYOND THE CLAUSE

A major difference between the Mann and Thompson analysis of Example 1 and the one offered here is that, in the latter, detail has been included indicating relations between nominal groups and clauses as well as between clauses and other clauses. The material Dioxin is assessed with respect to its safety, the mediating question being "What do you think of dioxin with respect to its safety?" and the answer being this material is considered harmful to health or the environment. In addition, the negative and positive elements of basis for the assessment of misplaced are also assessments themselves; indeed one of these has basis added in the form evidence is lacking that. Discussion of the use of assessments as basis for other assessments is provided in Jordan 1984b.

The main point to note is that textual cohesion involves more than relations between clauses, and even more than lexical/pro-nominal continuity systems. We must also recognize relations between parts of clauses and both full clauses and other parts of clauses. Now that we have examined the introduction of a co-hyponym as an essential part of comparison of a topic, we can analyze a further brief example from Mann and Thompson 1987 to illustrate the importance of analysis within the clause:

- (4) (1) The blast, the worst industrial accident in Mexico's history, destroyed the plant and most of the surrounding suburbs. (2) Several thousand people were injured, (3) and about 300 are still in hospital. (BBC World Service News - from Noel, 1986, p. 88)

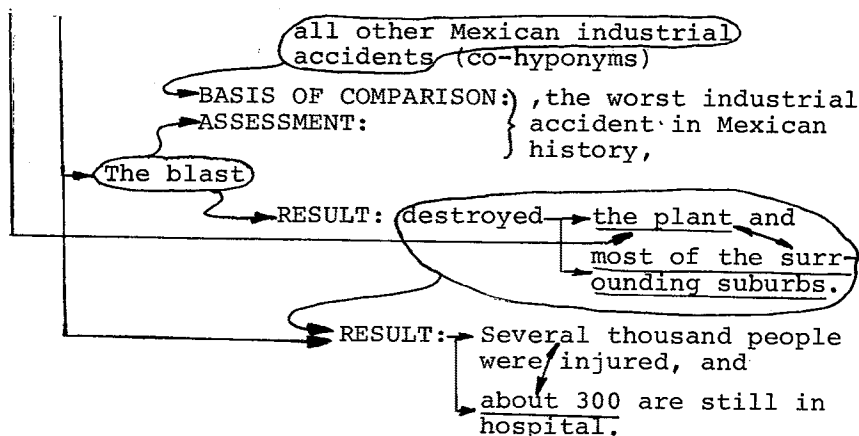
Mann and Thompson's analysis of this example is extremely simple (1987, p. 63):



This analysis indicates that there is a relation of non-volitional result between the first sentence and the second sentence (items 2 and 3). That is, that the whole of the information in the first sentence is the cause of the injuries and hospitalization, with no recognition of the appositional assessment by comparison. In addition, there is no indication of the cause-

effect relation between the subject The blast and the predicate of the main clause of the first sentence. We should therefore seek a more detailed and precise analysis.

In analyzing this text, we have to decide whether it was the blast or the destruction (or both) that caused the injuries and hospitalization - the three interpretations will lead to three different diagrams representing the relations in the text. For the analysis below, I have assumed that both the blast and the resulting destruction caused the injury and hospitalization. I have also assumed that both The blast and the plant re-enter previous parts of the text not cited in the example.



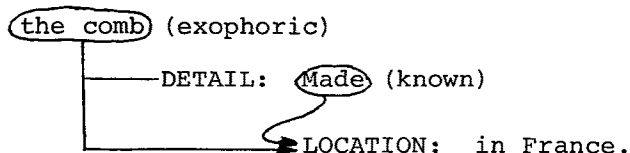
In this analysis, the question asked by the second result relation is "What did the blast and the resulting destruction of the plant and most of the surrounding suburbs cause to happen?" and the answer is provided in the final two clauses. The lexical connections are The blast, the plant, the plant's associated nominal most of the surrounding suburbs (containing the anaphoric adjective surrounding), and the partitive (about the people injured) about 300. More importantly, the appositive has been removed from the logical relationship as it does not represent anything different from The blast which helped to cause the effects noted. The information that it was the worst blast in Mexican industrial history did not contribute to the destruction. The apposition itself is seen as an assessment of the blast in comparison with all (co-hyponymic) industrial accidents in Mexico's history.

Like Winter, Hoey uses questions containing new lexis (not previously introduced in the text) as part of mediating questions. For example, his question "What is the shank made of...?" (1983, p. 144) contains the new lexis made. The need for such questions has been analyzed for speech and writing by Jordan (1987),

who recognizes such texts as

- (5) Made in France (on a hair comb)

as first providing detail already known to the reader that the comb has been made, as the basis for the new information providing the location of its manufacture:



The knownness is even clearer in:

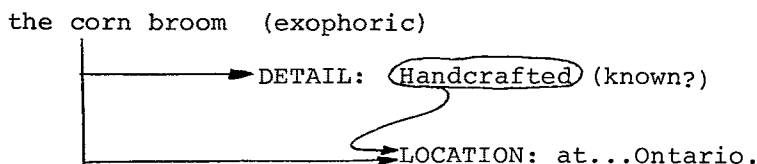
- (6) Nylon (on another comb)

where the known information "This comb is made" as the basis for the necessary complementation "of nylon" is not included. The mediating question "What is it made of?" clearly mediates between the comb and the detail of its material.

In contrast, the example

- (7) Handcrafted at Black Creek Pioneer Village Toronto Ontario
(on corn broom)

answers the question "Where is it handcrafted?" as



This time the incomplete passive Handcrafted is "less known" than the Made on the comb, and we have to recognize a cline of knownness from completely known to all readers to completely new to all readers. Different levels of knownness, or shared gnostological information (Gregory e.g. 1984 and colleagues), requires detailed investigation.

CONCLUSIONS

The purpose of this paper has been to introduce a system of text analysis and description that goes significantly beyond the analysis of relations between clause and clause. It provides a basis for understanding both lexical and multiple-relational aspects of textual continuity based on a single analytical and descriptive framework. For general rhetorical analysis, discus-

sion only of the relations between clauses may be adequate, but for a detailed linguistic understanding of the subject, there is a need to delve further - and this involves a study of the contextual meanings and relations of elements within as well as between clauses. This is not intended as a challenge to simple inter-clause analysis, but seeks to go beyond it.

Mediating questions between any definable, epitomizable parts of discourse form the basic principles for the approach outlined here. This search for the meaning within the syntax of the clause was first proposed and applied by Hatcher (1956a, 1956b) and has been elaborated and applied by Winter (e.g. 1974, 1982) and Hoey (1983). More recent work (Jordan 1988) uses the principles consistently in a detailed analysis of the clause relations of English texts, including analysis and signal indexing of nearly 400 examples.

In addition to the detailed analysis of clause relations offered by this approach, it also includes lexical/pronominal continuity as part of the analysis, with the potential of yielding definable combinations of relations with both nominal and clausal inputs. We can also recognize and add to the analysis details where two relations occur simultaneously (time and effect, for example) in line with points made by Karlsen (1964), Greenbaum (1969) and Jordan (1978). And the approach opens text up to detailed examination of the appropriateness of the relations, signaling and text content in meeting a rhetorical purpose.

The detailed analysis of even a very small extract of natural text is often extremely complex, but we must accept that complexity as the nature of the subject we have chosen to study. The horrifying complexity of Winter's mediating questions are not inventions on his part, but a determined effort to explain the contextual meaning of language. Similarly the analyses provided by the approach discussed here show a great deal of information not just for sake of complication, but because the information is there in the text and as scholars we cannot ignore it.

But even great complexity is understandable when presented in a structured and consistent form. The diagrammatic presentation of the analyses, showing the inputs to relations, the part related to and the signaling devices, should help to clarify the analysis and the types of cohesion present.

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PUNCTUATION IN THE TWENTIETH CENTURY

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Linguists frequently ignore features of written language in their linguistic descriptions and their discussions of language variation. The use of punctuation in particular has been overlooked and as a result few of us are aware of how it has changed even in so short a period of time as the twentieth century.

Studies conducted in 1917 and 1947 by George Summey, the foremost authority on punctuation in American English, seemed to show a distinct trend toward lighter, sparser punctuation. His samples of editorial writing from 1917 had 2.34 marks of punctuation per sentence (MPS) while in 1947 comparable samples had only 2.15. Johnson (1983) updated the investigation at the next thirty-year interval, using articles from the same or similar periodicals published around 1977. She found that the 1977 average MPS had risen above its 1917 level.

Seeking to understand these shifts, we expanded the research, obtaining data from sources not included in Summey's works and examining additional information about the data used in the three existing studies. Before going into the details of the expanded investigation, it is important to explain these three studies, how they were conducted, and what they found.

In the 1917 study (1919) Summey chose twenty texts from newspapers, weekly periodicals and serious non-fiction prose writers. The articles he chose were primarily editorial commentaries. He counted 1,000 marks of punctuation per text and calculated the MPS. In making his calculations Summey looked only at structural punctuation. He did not include quotation marks, apostrophes or marks within quotations. The average MPS for his samples ranged from a low of 1.59 to a high of 3.47; 2.4 was the median. When he repeated his investigation in 1947 (1949), he used 100-sentence samples from contemporary periodicals, counting the punctuation marks and calculating the average MPS. This later sample did not include texts from essayists; all these examples were journalistic, on issues of the time--the war, the economy, etc. The average MPS ranged from 1.73 to 2.75 with a median of 2.11.

In replicating the studies in 1977, Johnson (1983) chose the 1947 method for counting but included non-fiction writers as the

1917 study had. Consequently her study was based on data from 33 sources: 13 weekly periodicals, 10 journalists and 10 non-fiction writers. The average MPSs ranged from 1.51 to 4.22. The overall average MPS was 2.48 and the median was 2.4. Table 1 shows the results for the three original studies detailing the average marks to be found in a data set of 100 sentences.

Table 1
Terminal Marks

	.	?	!	:	...	--	MPS
1917 (total)	94.7	3.8	1.6				2.41
1917 (edit)	95.0	4.0	1.0				2.34
1947 (edit)	96.5	3.0	.3	.3			2.15
1977 (edit)	94.6	4.3	t	.5	.5		2.42
1977 (total)	94.3	3.6	.3	.7	1.1	t	2.48

Internal Marks

	,	--	;	()	:	...	X-	!	?
1917 (total)	118.3	7.4	10.8	1.7	2.1		.1	.1	.1
1917 (edit)	118.7	5.6	6.9	.6	1.8		.2	.1	.1
1947 (edit)	96.5	8.7	3.3	4.4	2.7				
1977 (edit)	113.0	9.5	5.4	8.7	4.9	.3		t	
1977 (total)	118.9	10.1	5.1	9.3	4.6	.3		t	.1

numbers represent occurrences per 100 sentences
t = <.1; X- stands for all punctuation combinations.

These three studies revealed several changes in punctuation during the twentieth century. Combinations of commas, semi-colons or colons with the dash, uncommon in 1917, had disappeared by 1947. A greater variety of terminal punctuation began to appear in 1947, and in 1977 sentences ending with suspension dots (ellipsis) or a dash were found in the data. A few individual marks showed evidence of change, but the major development was that the drop in average MPS from 2.34 in 1917 to 2.15 in 1947 was reversed in 1977. The average MPS rose to 2.42, even higher than the 1917 average. Summey had believed the drop he observed was evidence that "heavy punctuation is a thing of the past" and "current journalistic writing uses a straight-line subordinating style" with less use of structural punctuation per sentence (1949: 157). He would certainly have been surprised that a brief thirty years later those figures had changed and even more punctuation was appearing in each sentence.

Given the results of Johnson's study (1983), we must question Summey's conclusions and look once again at his data. He had recognized that the averages depended "not only on skill in writing and punctuation but also in part on subject matter and personal or office styles" (1949: 160). Since he was careful to

choose data from similar contexts and genres about comparable topics--business, politics, economics--the effects of those variables were minimized. Nevertheless, the impact of adding information about essayists' usage produced enough difference in the average MPS to question how applicable Summey's findings were outside his fairly restricted corpus. Therefore we expanded the research to add data taken from women's magazines published in 1917, 1947 and 1977 to see if a different perceived audience would affect the use of punctuation. These articles were also editorial-like commentaries. They focused on economic, business, legal and health issues. The results revealed some quite different patterns as shown in Table 2.

Table 2
Terminal marks

	.	?	!	:	MPS
1917	96.7	1.0	1.7	.7	2.97
1947	97.7	1.3	.7	.3	2.85
1977	92.0	5.3	1.7	1.0	2.77

Internal marks

	,	--	;	()	:	...	X--
1917	169.7	11.0	13.3		.7	.7	1.7
1947	156.7	16.0	8.7	2.0	1.0	.7	
1977	132.3	13.3	2.7	26.7	1.3	.3	

numbers represent occurrences per 100 sentences
t = <.1; X- stands for all punctuation combinations.

In women's magazines the average MPS was higher overall than in journalistic commentaries. Furthermore, the trend showed a decrease from 2.97 in 1917 to 2.85 in 1947 and finally to 2.77 in 1977. The 1947 drop in punctuation use observed by Summey did not extend to the three magazines we investigated (Good Housekeeping, House Beautiful and Ladies' Home Journal). In fact the MPSs for two of the magazines were more than .4 marks higher than the highest sample in Summey's 1947 corpus. The frequency of commas alone was evidence of that difference. The decrease in the use of commas from 1917 to 1947 was very small. In addition, there was a slightly higher instance of what Summey (1919: 256) called "emotional" punctuation--dashes, exclamation points, suspension dots. The 1947 examples from these sources did not display much sign that heavy punctuation was a thing of the past as Summey had claimed.

Like the editorial writing in 1977, women's magazines used a bit more variety both in terminal marks and in internal marks than was evident in 1917 or 1947. However, trends for the use of certain individual marks in editorial writing did not show up in

the women's magazines. For example, the use of the semicolon had decreased in 1947 and then risen again in 1977. In women's magazines the semicolon was fairly common in 1917, occurring more frequently than in editorials. It became less popular in 1947, and had dropped to only 2.7 occurrences per 100 sentences in 1977. The frequency of the dash appeared to be rising slowly but steadily in editorial writing. Although our investigation showed it had always been more popular in women's magazines than in editorials, in 1977 its use declined, opposing a general trend toward greater frequency. Parentheses were rising in popularity in both editorial writing and in women's magazines. The rapidity of their rise in women's magazines, however, was partially due to their extremely high occurrence (60) in a single article. Nevertheless, a definite increase in the use of parentheses occurred in both contexts.

In some instances the distribution of punctuation in women's magazines was sufficiently different to have an impact on the overall average MPS as shown in Table 3.

Table 3
Terminal marks

	.	?	!	:	.	--	MPS
1917	94.9	3.6	1.5				2.43
1947	96.7	2.7	.3	.3			2.25
1977	94.1	3.8	.4	.7	1	t	2.50

Internal marks

	,	--	;	()	:	...	X-	!	?
1917	120.1	7.6	10.9	1.6	2.2	.1	.9	.1	.1
1947	104.3	9.6	4.0	4.1	2.4	.1			
1977	120.0	10.4	4.9	10.8	4.3	.3		t	.1

numbers represent occurrences per 100 sentences
t = <.1; X- stands for all punctuation combinations.

Some marks deserve additional attention. Johnson (1983) noted the increased use of ellipses, colons, and dashes in her 1977 data. Ellipses are probably more appropriately called suspension dots in this study because they indicate a pause for emphasis or effect rather than omitted material. The marks did not appear in Summey's 1917 or 1947 data. He found them only in advertisements and fiction, although we found occasional examples in women's magazines. In 1977 suspension dots began to show up in editorial journalism, and ironically, their frequency then decreased somewhat in women's magazines. Because suspension dots are so clearly identified as affective marks of punctuation, it is not surprising that they are used only rarely, but their appearance in editorials may be an indication of a more emotional

style of rhetoric (see 1).

1. The place looked like the receiving bin at the Good Will ... a promiscuous heap of junk ... (Tom Wolfe, 1973)

The dual function of the colon as both a terminal and an internal mark of punctuation makes it noteworthy. As an internal mark it may introduce a list or join two clauses. When it joins two independent clauses, there is no grammatical difference to distinguish the terminal colon (2) from the internal colon (3). The only distinction is the capital letter which follows the terminal colon.

2. Businessmen and their employees soon may be adjusting themselves to this newer circumstance: People cannot be forced to leave their jobs at age 65.
(U.S. News and World Report, 1977)
3. Barzun was a problem: he required very little editing and accepted less.
(John Simon, 1977)

Most style sheets and handbooks do not classify the colon as a mark of terminal punctuation even though they may advocate the use of a capital letter following it. The absence of any grammatical factors to differentiate terminal and internal colons means that the distinction between the two is a purely arbitrary one.

The dash is a mark of punctuation used more frequently than is noticed. Most of our authorities discourage its use in formal contexts. Yet this investigation reveals a steady increase in its use from 1917 to 1977. The only exception is in women's magazines where the appearance of the dash decreased slightly in 1977. The purpose of the dash is diverse; it can take the place of colons, semicolons, commas:

4. A lot of mail coming this way insists that the Korean payoff scandal in Congress is a true reflection of America's overall morals--that we are getting what we deserve.
(Marvin Stone, 1977)
5. Our own government is taking an apprehensive view from a low profile, so to speak--we have sent in a few planeloads of supplies but no arms, ...
(The Nation, 1977)
6. The men do the manufacturing, the women do the packaging--and each works at his or her own pace.
(Newsweek, 1977)

As in other kinds of language variation, individual user, topic, context, genre are important factors in understanding how punctuation changes. One writer included in the 1947 sample was

still active in 1977--Vermont Royster. His MPS in 1947 was low, 2.04. In 1977 it had risen to 2.31, in keeping with the pattern observed in Johnson's study. Other samples, taken from the same periodicals at different times, showed that not all users demonstrated that trend.

Table 4

	1917	1947	1977
New York Times	2.33 MPS	2.69 MPS	2.21 MPS
The Nation	2.35 MPS	2.49 MPS	2.40 MPS
Christian Science Monitor	3.40 MPS	1.78 MPS	1.88 MPS
Newsweek	...	2.34 MPS	2.35 MPS

The New York Times and The Nation had higher MPSs in 1947 than in 1917 or 1977. The Christian Science Monitor underwent a marked change between 1917 and 1947 and then remained low in 1977. In-house style sheets are probably responsible for the consistent MPS levels to be found in The Nation, Newsweek and the later Christian Science Monitor.

The topics in these data sets were fairly similar; nevertheless, some showed a great range of varying usage. For example, articles about business had MPSs as low as 1.76 and as high as 3.49. Other topics yielded very little variation. The type of publication or context also had an impact on some punctuation usage as the figures in Table 2 from women's magazines showed.

Summey (1919) had recognized the potential impact of genre in his discussion of fiction, which he found to display much greater variety than journalistic writing. Instead of examining fiction where personal style is such a factor, we chose to look at the punctuation used in advertisements. We hoped to be able to find additional evidence of change because the language in advertising is less formal. Consequently we examined the usage in magazine advertisements from 1917, 1947 and 1977. The results are presented in Table 5:

Table 5
Terminal marks

	.	?	!	:	...	--	0	MPS
1917	72.9	1.6	3.1	.2	.2	.6	21.4	1.72
1947	57.8	3.0	18.7	.8	.6	.4	18.7	1.71
1977	88.8	2.0	2.4	.4	.2		6.3	1.50

Internal marks

	,	--	;	()	:	...	X-	!
1917	66.9	15.9	5.2	1.6	.8	.3	.5	2.4
1947	59.4	15.8	1.8	1.6	.8	9.1	.2	1.2
1977	46.5	2.4	.4	2.9	3.5	.9		

numbers represent occurrences per 100 sentences

t = <.1; X- stands for all punctuation combinations.

Our data included 40 ads from the leading periodicals of each period. There were 616 sentences in the 1917 corpus, 493 in 1947, and 544 in 1977. The average MPSS were much lower in the ads as might be expected for informal written language--1.72 in 1917, 1.71 in 1947, and 1.5 in 1977. Several features of the advertising format demanded attention. For example, many sentences or quasi-sentences had no end punctuation at all. In Table 5 they are listed as having a zero (0) terminal mark. Sentence fragments also were a more prominent feature of advertisements than of other more conventional contexts; consequently we have included information about their frequency, which showed remarkably little variation: 28% of the sentences in the 1917 ads were fragments, 29% in 1947 and 27.9% in 1977.

It was to be expected that more of the so-called emotional punctuation would be found in ads, but we were surprised to find such diversity. In 1917 approximately 12.7% of the punctuation in ads could be called emotional. In 1947 a whopping 25.8% fell into that category. In 1977 the percentage dropped to 5.5, resulting in a preponderance of periods and commas in the data for 1977. The 86.2% periods and commas was comparable to the figures for the more conventional prose of all three periods:

Table 6
Percentage of periods and commas

	1917	1947	1977
all prose commentaries	88.6	89.3	85.6
ads	72.1	61.7	86.2

Our findings (19.9 exclamation points, 16.6 dashes and 9.7 sets of suspension dots per 100 sentences) indicate that a very loose, dramatic style of punctuation was characteristic of ads in 1947. 1977 ads, on the other hand, seemed to use a very conservative, prose-like style of punctuating. To a certain extent that is true; however, it is important to note two other developments. In 1977 the number of unpunctuated sentences declined significantly; at the same time the number of periods increased. The result was that more of the fragments in 1977 were punctuated as if they were intended to be sentences, with

sentence intonation. Using the period for emphasis, making each claim a separate assertion, has been identified as current practice in advertising by Little (1987: 27).

Now, what are we to conclude from these findings? Summey's suggestion that we were beginning an era of lighter punctuation was not borne out in 1977. Why then was there such a drop in the use of punctuation in 1947? Shorter sentences was one explanation that we investigated. However, we discovered no particular difference in the average sentence length for the three data sets:

Table 7

1917	22.45 words/sentence	.104 marks/word
1947	22.02 words/sentence	.096 marks/word
1977	21.75 words/sentence	.122 marks/word

Furthermore, the MPSSs for women's magazines showed no evidence of that drop. What could explain the paucity of punctuation in the editorial writing of 1947? Although it seems highly speculative, World War II seems a possible explanation. Most of the editorial writers and commentators in 1947 would probably have spent time as war correspondents. The writers for women's magazines were unlikely to have had such experience. The style of the men who reported the war may well have lost some of its elaborated forms, especially the optional punctuation. Speculative though such an answer might be, it does offer a reason for the continued level of punctuation use in women's publications.

Another possible explanation is that the lighter punctuation Summey found gave way to a more elaborate style in the 1970s, that we have embarked on a new euphuistic age. There is a higher incidence of punctuation per word in 1977 than in either 1917 or 1947 (see Table 7). However, convincing support for such an argument would require evidence beyond the scope of this study.

The distribution of some individual marks may offer insights to the process of change in punctuation usage. The dash, in particular, has shown a very diverse range of occurrence. First we observed that it was gaining in popularity and it seemed to be part of a move to more expressive language. Then we discovered that the dash was less popular in women's magazines of 1977 than in earlier times. This development could have taken place because the dash's growing acceptance made it less appealing to the in-group with which it had been associated. But that view is not especially convincing; it is hard to think of the style of women's magazines as being closely enough tied to dashes for such a result.

It is also possible that the pattern of use in ads is indicative of the dash's future. In spoken language we look to

informal speech for innovative forms. The dramatic decrease in the use of dashes could be a sign that the mark will fall into disuse. That conclusion is not compelling either because it contradicts the usage trends observed in other contexts. Furthermore, it implies very rapid change while other developments are far more gradual--the declining use of the semicolon, the slow rise in the use of parentheses, colons, and suspension dots.

Perhaps we should not try to impose the paradigms of change we inherited from the Neogrammarians on the data we find here. As Bloomfield points out (1933: 355) our assumption should be that change is regular and non-sporadic. If, however, that assumption leads us to unsatisfying, contradictory conclusions, we must consider the possibility that the change is indeed sporadic, governed by whimsey. The changes we find in the data here present such a case.

Note: The number of sentences examined for each phase of the research is as follows:

Summey (1919)	8283 sentences
Summey (1949)	2000 sentences
Johnson (1983)	3300 sentences
women's magazines	900 sentences
ads	1653 sentences
TOTAL	16136 sentences

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WOOLF'S DESCRIPTIVE STYLE
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While analyzing discourse, both written and spoken, it has often occurred to me that descriptive and narrative passages vary semologically and morphosyntactically in predictable ways. Of course, this only applies to those texts where the two are delegated to fairly distinct passages. Descriptive selections have seemed primarily nominal in style, in that modification, qualification and complementation seem the relations most frequently realized. Adjectives and deictics typically realize the modifiers, prepositional groups and relative clauses the qualifiers and noun and adjective groups the complements. Morphosyntactically then, I would expect a descriptive passage to include a number of modifiers, qualifiers and/or copula complements. The extent to which each is used depends on the particular author in his particular gnostological and situational context (cf. Asp 1985a, Gregory 1985a, Malcolm 1985a). Semologically, it seems that relational processes are particularly important when it comes to description, both within the nominal group (cf. Asp 1985b) and as the primary predications in the proposition itself (cf. Gregory 1983). While relational processes of attribution are obvious candidates for descriptive choices, 'she is happy', classificatory 'he is a happy man' and identificatory processes 'he is the happy man' are also prevalent in such passages. Where narration is intertwined with description, relational processes seem to carry the descriptive element and action processes the actual events.

The intra-phasal consistency of semological roles in children's talk compared to the variation in the conversation of adults, has aroused my curiosity as to the degree of consistency in the descriptive styles of different authors in different texts. It is with this in mind that I draw your attention to the three selections of descriptive prose in the Appendix, taken from Virginia Woolf's novels Night and Day and To the Lighthouse, respectively. Woolf seems to be an author who sometimes juxtaposes descriptive elements throughout her narration, but at other times, keeps her descriptive and narrative passages distinct. The texts to be analyzed here, are all examples of the latter type of descriptive passage.

The framework that I have used for these analyses is called Communication Linguistics (cf. Gregory 1985b, Malcolm 1985b). In this framework three aspects of discourse are identified. Discourse #1, also called the 'intended message' (Malcolm 1985a), is defined as the communicative impetus, wherein the language user selects the ideational and interpersonal information which is to be encoded and conveyed to the decoder for interpretation. Discourse #2, called the interpreted message by Malcolm (ibid), is the communicative consequence, wherein the language receiver decodes and interprets what seems communicatively relevant to them from the instantiated message and situation via their gnostology. This, of course, may differ from what was intended. Discourse #3 is regarded as the dynamic instantiation of viable message in situation. 'It is the combined set of neural and physiological activities that represent the transitional codification of message, of which manifesting instances are a consequence' (Asp 1985b: 33). Hence, it is more or less recoverable not only by the language receiver, but also by third person listeners/readers.

As an analyst, then, I am concerned with discourse three. This means that I am not directly concerned with questions pertaining to the instantial situation in which Woolf originally encoded her message, nor the gnostological resources from which it was conceived, nor my gnostological resources through which I am interpreting it. At this point I am not interested in the discourse so much as a dynamic instantiation of intentionally communicative behaviour, as a static realization of a number of semological and morpho-syntactic choices designed to fulfill the purposes of setting the scene and establishing the characters in her novels.

The three descriptive passages, especially the first two that I have chosen, are quite similar, particularly in the interpersonal and textual selections made which realize them. Morphosyntactically, the mood selected is consistently declarative, other than a few instances of interrogatives in the direct speech of passage three. The predicators selected are seldom tempered by modalities either. At the rank of sentence, Woolf occasionally makes use of the attitudinal, which she often uses to interrupt the proposition rather than precede it (she uses topics even more sparingly). Textually, the theme is always unmarked in passages one and two, and is often marked in passage three. A variety of cohesive devices offer coherence to the passages (cf. Malcolm 1984): additive conjunction, a few examples of ellipsis and the odd one of substitution, some personal reference (passage three uses introductory logical links, rather than additive conjunctive ones). However, lexical collocation is likely

even more important to the texts' cohesion. Seriation, parataxis and alpha-beta clause complexes add intrasentential cohesion to the passages' internal structure, and punctuation (semi-colons) often connects propositions. There is some similarity in the ideational choices made in all three passages also. The active voice predominates, although not exclusively, and the tense remains the past throughout. Variety in sentence length is an important characteristic of all three passages too; simple sentences including not more than twenty words, are juxtaposed to compound complex graphological sentences of some seventy words.

The first passage describes Denham's room. Consequently, conceptual sets concerning furniture, buildings, clothes, colour and shape are quite natural. The poverty and bird sets are less so. The seven graphological sentences in this passage include fourteen propositions and thirty predications (see glossary). Morphosyntactically and semologically this passage substantiates the generalizations made about the nominal emphasis of descriptive passages. At clause rank, adjuncts are realized almost as often as complements, but the complements are the loci of secondary and tertiary predications, as opposed to the single adverbs or prepositional groups which realize the relatively unemphasized adjuncts. At the rank of group, Woolf adds description through both modification and qualification. However, her qualifiers seem to get more emphasis as they are realized by non-finite and relative clauses in addition to prepositional groups, not just by the single adjectives or deictics of the modifiers; in this passage almost half the qualifiers are realized by prepositional groups and the other half are almost evenly distributed between relative and non-finite clauses. That the qualifiers are both paratactically and hypotactically connected to further qualifiers allows Woolf even greater descriptive scope than isolated qualifiers would.

Semologically, this passage is characterized by relational processes primarily, particularly classificatory and attributive ones. Sentences with action processes form boundaries around the descriptive portion of the paragraph and re-introduce the narrative's participants and events (sentences #1 & #7). Were I to analyze the phases in these passages, these semological boundaries would likely coincide with phasal boundaries, or at least transitions. The action processes that are included in the actual description, are usually deeply embedded as the third, fourth or fifth semological predication (cf. Gregory 1983), and are juxtaposed to either inanimate participants 'one of the tables concealed a washing apparatus', or used in the passive voice 'his clothes and boots were disagreeably mixed with ...', either case leading to an ambiguity between

which type of process is actually manifested, action or relational. Mental processes seldom realize the predications in this passage, and time and place circumstances are of little importance; Woolf's adjuncts are more likely to realize the role of manner.

Passage two, also taken from Night and Day, describes a character, rather than a geographical setting: Katharine. Conceptual sets dealing with appearance, dress, parts of the body, shape, colour, personality and spirit are, therefore, all quite predictable. This passage also includes seven graphological sentences, which include twice as many propositions and five times as many predications. Although there are some adjuncts, which carry the role of manner, complements are of far greater importance to the clauses in this passage. And within the complements particularly, there is a great deal of qualification. Modifiers are realized by deictics and adjectives, qualifiers by an assortment of groups and clauses. Actually, the word 'assortment' is perhaps somewhat misleading; in fact, the percentage of prepositional groups to non-finite and relative clauses is the same as in passage one. One cannot make a great deal out of this observation, given the lack of data, but it points to one of the interesting features of Woolf's descriptive style that warrants further investigation.

The semological choices in this passage are similar to, yet different from, those made in passage one. Relational processes are favoured once more, mostly attributive in nature, but action processes are seldom manifested. Instead, mental processes of verbalization, cognition and reaction take over as the process types most frequently embedded, other than relational processes that is. A possible explanation for this shift in process concerns the perspective of the persona describing the setting/character. In passage one, the description of the room is not made 'overtly' by Denham, although the collocation of the subjectively oriented 'poverty' lexical set with the 'furniture' set makes it seem likely. Consequently, mental processes which might otherwise preface the description, such as: 'he thought', 'he saw', 'he disliked', are absent. In the second passage, however, Katharine is described openly through Denham's consciousness. This accounts then for some of the mental processes: 'one might say', 'Denham decided', 'Denham noticed', 'it struck him', 'he checked his inclination'; while others are credited to Katharine 'to answer immediately her mother', 'she kept sufficient control'. The circumstance of time is of some importance to this passage, albeit minimal, and beneficiary recipients are manifested as well.

Passage three, from To the Lighthouse, describes

a house. In the fifteen graphological sentences are twice as many propositions and five times as many predications. Despite the similarity with passages one and two in these statistics, passage three is actually quite different. At the rank of clause, adjuncts now figure much more prominently than complements, and many of these adjuncts include a secondary predication. In fact, a number of predicative adjuncts are featured 'And so, nosing, rubbing, they went to the window on the staircase, to the servant's bedroom, to the boxes in the attic, descending, blanched the apples on the dining-room table, fumbled the petals of roses, tried the picture on the easel, and blew a little sand along the floor (cf. Gregory 1982). Modification and qualification still mark the nominal groups, but to a much lesser extent. And qualifiers are almost always realized by prepositional groups.

Semologically, the numerous, often seriated adjuncts, usually fulfill the role of place or manner. The forty odd place circumstances are typically codified in prepositional groups and the twenty some circumstances of manner are realized by adverbs and 'as if...' clauses. Time is relatively unimportant to the text. The emphasis on circumstance in passage three, by frequency of occurrence alone, is supported by the focus often given the circumstances, where the actor-subjects have been displaced to second position in the clause (see sentences #4,6,7,8,10,12,13,14 & 15). Not surprisingly, a shift in the process type which predominates marks passage three along with the shift in import of circumstance. The primacy of relational processes in the first two passages has been replaced by action processes. Two-thirds of the total processes reflect action and of these half are within the primary predication. The remaining third of the processes are fairly evenly split between mental and relational processes. Half of the mental processes occur within the primary predication, as processes of verbalization support the inclusion of eight examples of direct speech, half of which are in the form of questions. The relational processes in this passage are deeply embedded.

Action and mental processes, unusual in conventional description, perform the function of making the description more life-like. However, what is unusual about this 'humanizing' effect is that none of the actors who perform the actions and process the thoughts and feelings are clearly animate. In the first paragraph it is the 'darkness' which 'came' and 'swallowed', 'nothing' that survives, an ambiguous 'somebody' who 'laughs', and 'a hand' and 'furniture' which, through passivization, relegate the actual actor unimportant. In the second and third paragraphs it is the 'airs' which 'creep', 'fumble', 'reply', 'sigh' and 'toy'.

Through personification, then, the entire passage is made real and vital. The action processes, and place and manner circumstances are active partners in creating this illusion.

I cannot pretend to have arrived at any irrefutable conclusions concerning Virginia Woolf's descriptive style in particular, nor descriptive options in general, from these brief analyses of three short passages. Certainly, there were similarities, which one would like to say depict the typical descriptive passage by Woolf: her consistency in choice of mood, omission of modalities, variation in cohesive device, seeming preference for the past tense, variation in sentence length, yet consistency in ratio of propositions to predications which account for this variety. However, there were differences also, important ones. Passages one and two seem somewhat more traditional, in that they emphasize the nominal group generally, the qualifier particularly; relational processes and a general absence of circumstantial information support this nominal focus. Passage three seems more interesting perhaps, less typical, in its verbal and circumstantial flavour, and in the ambiguity of its inanimate actors performing actions, non-actions, thinking thoughts, non-thoughts and feeling feelings, non-feelings.

Certain conclusions can be made, despite how limited the data - Woolf has a wonderful command of the language that allows her to vary her descriptive style considerably and in so doing, to keep language at its liveliest and establish memorable characters and settings which ably contribute to the themes and moods she sees fit to communicate. The strength of Communication Linguistics may well lie in its instantial and gnostological bases, or in its dynamic and static perspectives on discourse; however, from these analyses it is hoped that as a simple practical codally descriptive tool its value is also noted.

Glossary

Predication- the unit of the semology which refers to a single process and its attending roles

Proposition- the unit of the semology that describes predications which select from the systems of speech organization and complex message organization

Sentence- the most inclusive unit of the morphosyntax and the bridge unit between language's codal potential and its actualization in discourse

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APPENDIX

A. 1. He went up a great many flights of stairs and he noticed, as he had very seldom noticed, how the carpet became steadily shabbier, until it ceased altogether, how the walls were discoloured, sometimes by cascades of damp and sometimes by the outlines of picture-frames since removed, how the paper flapped loose at the corners, and a great flake of plaster had fallen from the ceiling. 2. The room itself was a cheerless one to return to at this inauspicious hour. 3. A flattened sofa would, later in the evening, serve as a bed; one of the tables concealed a washing apparatus; his clothes and boots were disagreeably mixed with books which bore the gilt of college arms; and for decoration, there hung upon the wall photographs of bridges and cathedrals and large, unprepossessing groups of insufficiently clothed young men, sitting in rows one above another upon stone steps. 4. There was a look of meanness and shabbiness in the furniture and curtains, and nowhere any sign of luxury or even of a cultivated taste, unless the cheap classics in the book-case were a sign of an effort in the direction. 5. The only object that threw any light upon the character of the room's owner was a large perch, placed in the window to catch the air and sun, upon which a tame and, apparently, decrepit rook hopped dryly from side to side. 6. The bird, encouraged by a scratch behind the ear, settled upon Denham's shoulder. 7. He lit the gas-fire and settled down in gloomy patience to await his dinner.

Night and Day - Woolf p.22

B. 1. Katharine, so Denham decided, while Mr. Fortescue built up another rounded structure of words, had a likeness to each of her parents, and these elements were rather oddly blended. 2. She had the quick, impulsive movements of her mother, the lips parting often to speak, and closing again; and the dark oval eyes of her father brimming with light upon a sadness, or, since she was too young to have acquired a sorrowful point of view, one might say that the basis was not sadness so much as a spirit given to contemplation and self-control. 3. Judging by her hair, her colouring, and the shape of her features, she was striking, if not actually beautiful. 4. Decision and composure stamped her, a combination of qualities that produced a very marked character, and one that was not calculated to put a young man, who scarcely knew her, at his ease. 5. For the rest, she was tall; her dress was of some quiet colour, with old yellow-tinted lace for ornament, to which the spark of an ancient jewel gave its one red gleam. 6. Denham noticed that,

although silent, she kept sufficient control of the situation to answer immediately her mother appealed to her for help, and yet it was obvious to him that she attended only with the surface skin of her mind. 7. It struck him that her position at the tea-table among all these elderly people, was not without its difficulties, and he checked his inclination to find her, or her attitude, generally antipathetic to him. **ibid p.10**

C. 1. So with the lamps all put out, the moon sunk, and a thin rain drumming on the roof a downpouring of immense darkness began. 2. Nothing, it seemed, could survive the flood, the profusion of darkness which, creeping in at keyholes and crevices, stole round window blinds, came into bedrooms, swallowed up here a jug and basin, there a bowl of red and yellow dahlias, there the sharp edges and firm bulk of a chest of drawers. 3. Not only was furniture confounded; there was scarcely anything left of body or mind by which one could say 'This is he' or 'This is she'. 4. Sometimes a hand was raised as if to clutch something or ward off something, so somebody groaned, or somebody laughed aloud as if sharing a joke with nothingness. 5. Nothing stirred in the drawing-room or in the dining-room or on the staircase. 6. Only through the rusty hinges and swollen sea-moistened woodwork certain airs, detached from the body of the wind (the house was ramshackle after all) crept round corners and ventured indoors. 7. Almost one might imagine them, as they entered the drawing-room, questioning and wondering, toying with the flap of hanging wall-paper, asking, would it hang much longer, when would it fall? 8. Then smoothly brushing the walls, they passed on musingly as if asking the red and yellow roses on the wall-paper whether they would fade, and questioning (gently, for there time was at their disposal) the torn letters in the wastepaper basket, the flowers, the books, all of which were now open to them and asking, Were they allies? Were they enemies? How long would they endure?

9. So some random light directing them from an uncovered star, or wandering ship, or the Lighthouse even, with its pale footfall upon stair and mat, the little airs mounted the staircase and nosed round bedroom doors. 10. But here surely, they must cease. 11. Whatever else may perish and disappear what lies here is steadfast. 12. Here one might say to those sliding lights, those fumbling airs that breathe and bend over the bed itself, here you can neither touch nor destroy. 13. Upon which, wearily, ghostily, as if they had feather-like fingers and the light persistency of feathers, they would look, once, on the shut eyes and the loosely clasping fingers, and fold their garments wearily and disappear. 14. And so, nosing, rubbing, they went to the window on the staircase, to the servant's bedrooms, to the boxes in the attics; descending, blanched the apples on the dining-room table, fumbled the petals of

roses, tried the picture on the easel, brushed the mat and blew a little sand along the floor. 15. At length, desisting, all ceased together, gathered together, all sighed together; all together gave off an aimless gust of lamentation to which some door in the kitchen replied; swung wide; admitted nothing and slammed to.

To the Lighthouse (p.118)

DISCOURSE INFLUENCES ON THE SYNTAX OF ORDERED EVENTS:
EVIDENCE FROM TEXTS

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Introduction

Like many languages, English permits several alternative "paraphrases" for the encoding of two temporally ordered events. For example, the following two ordered events:

- E1: Sue entered the room.
E2: Sue turned on the light.

can be represented by the following five structures, among others:

- Type 1: S1 CONJ S2
Sue entered the room and (then, and then, but) she turned on the light.
Type 2: S1 before S2
Sue entered the room before she turned on the light.
Type 3: S1 after S2
After Sue entered the room, she turned on the light.
Type 4: S2 after S1
Sue turned on the light after she entered the room.
Type 5: before S2, S1
Before Sue turned on the light, she entered the room.

While these sentences appear to be paraphrases to the extent that they all represent the same two propositions, they differ in a variety of ways. Within a specific context, however, one is typically preferred to the exclusion of the others. While there are certainly other ways of representing such information about ordered events, our attention here will be directed toward just these five structures.

While considerable psycholinguistic research has been directed toward understanding the acquisition of before and after structures (e.g., Clark, 1971; Hatch, 1971; French & Brown, 1977; Trosborg, 1982), relatively less research has been devoted to the adult's processing of these structures (see Clark & Clark, 1968; Smith & McMahon, 1969; Sullivan, 1974). This paper examines those syntactic and discourse factors which govern the selection of an appropriate syntactic form for representing temporally ordered events. Two studies are reported, one in summary form and one in detail. Data for the major study consists of more than 1300 running pages of written text from three difference sources. In each, the occurrence and frequency of structures such as those above

were tabulated and analyzed. We shall suggest the factors governing the selection of the appropriate forms derive their existence from general cognitive principles.

Syntactic Factors

In the sentences above, the first contains a coordinate conjunction in which the first event is represented as the first clause. The remaining four all involve a main plus a subordinate clause. One immediately obvious syntactic factor which might be expected to contribute to the selection of the structures is that of relative syntactic complexity. Under the plausible assumption that conjoined sentences are easier to process than complex ones, this SYNTACTIC COMPLEXITY constraint predicts that Type 1 should be easier to produce and comprehend, all things being equal, than the others.

A second syntactic factor which might be involved is that in English, the unmarked case for a complex sentence normally has the main clause (MC) before the subordinate clause (SC) (Clark & Clark, 1977). This MAIN-SUBORDINATE constraint is of course not relevant to the compound sentences, but it does predict that of the complex ones, Types 2 and 4 should be easier to process than Types 3 and 5. While these two factors appear to be syntactic, it will be argued below that context also plays an important role here.

Discourse Factors

Among those proposals found in the literature relating to the effect of context on sentence form, the two most relevant for the structures under consideration here are the ORDER OF EVENTS and the GIVEN-NEW constraints. The ORDER OF EVENTS constraints states that a sentence whose clauses are in the same order as the events they represent is easier to process than one in which the clauses do not mirror the order of events. This constraint predicts that Types 1, 2, and 3 should be easier to process than Types 4 and 5.

The GIVEN-NEW constraint (Clark & Haviland, 1974; Clark & Clark, 1977; Smyth, Prideaux, & Hogan, 1979) states that speakers (or writers) partition messages into two types of information: that which is known to both the speaker and hearer ("Given" information) and that which is known to the speaker but not to the hearer ("New" information). Moreover, Given and New information are typically separated and encoded by distinct grammatical means. Bever (1969) has suggested that in complex sentences, Given information is usually found in the subordinate clause, while New information usually resides in the main clause. This follows from the fact that the assertion in a declarative sentence is basic and is represented by the main clause, while any presuppositions are found in subordinate clauses. By the same token, in a compound sentence, the two clauses are typically both Given or both New. The GIVEN-NEW constraint can only be tested by establishing

whether each clause in a complex sentence is Given or New as assessed in terms of the preceding context.

It is apparent from these observations that several distinct factors can be involved in determining which structure is most appropriate in a particular context. How, then, is the effect of each of these factors to be evaluated? To approach this problem, we turn to an analysis of several texts, using text counts as data to assess the predictions sketched above. More specifically, we shall operationally define the relative frequency of structures as a measure of their relative complexity. Accordingly, those structures predicted to be easier to process (produce or comprehend) should be relatively more frequent in texts. This assumption provides the necessary link between text count data and the relevant psychological principles involved. Clearly, the criteria associated with processing are cognitive in nature, though we anticipate that they will be reflected in the kinds of structures used in particular situations.

In this paper, two separate text count studies will be discussed. The first will be summarized since it has been reported elsewhere, while the second will be discussed in more detail. The paper closes with a discussion of the general principles which are supported by the results.

Text Counts

In order to examine the frequencies of the various structures, and thereby assess the strengths of certain of the constraints, McCormick and Prideaux (in press) carried out a series of five text counts from four different sources (Murphy, 1979, pp. 5-55, 98-170; Salinger, 1951, pp. 5-104; Newman, 1979, pp. 3-75; and Evans, 1979, pp. 3-100). The first two texts were fiction and were chosen because they were attempts to mirror the spoken language. The other two texts were non-fiction. Some 390 pages of text were examined, and a tally was kept of each of the structures discussed above, although the contexts were examined only for a select subset of these. Counts were also made of the various types of conjoined structures appearing in the samples.

The results of that study indicated that compound structures were found significantly more often than complex ones ($X^2 = 193.9$, $p < .001$), thus supporting the SYNTACTIC COMPLEXITY constraint. There was, however, no significant tendency within this sample for the main clause to precede the subordinate one, and therefore these data provided no support for the MAIN-SUBORDINATE constraint. Strong support was found for the ORDER OF EVENTS constraint, with Types 2 and 3 having a significantly higher frequency than Types 4 and 5 ($X^2 = 13.6$, $p < .001$). In this study, no systematic tabulation was kept of the Given and New information, since the primary focus was on syntactic aspects of the text.

Two puzzling questions emerged from these results: first, why was there no support for the MAIN-SUBORDINATE constraint and, second, why are there any violations of the ORDER OF EVENTS constraint? An examination of the five types cited above reveals that only Type 5 (before S2, S1) violates both constraints. Indeed, only 11 instances of this type were found out of a total of 321 examples across the 390 pages. An examination within the Salinger text of the contexts for the cases in which the ORDER OF EVENTS is violated revealed that more than half of the cases with subordinate clause first were found in paragraph initial position. However, for these same structures, even when the order of events is not reflected in the clause order, the subordinate clause contained Given information and the main clause New information.

The number of instances here was quite small, however, and it is difficult to draw definitive conclusions from such a tiny sample. Nevertheless, the results suggest that the marked word order of subordinate clause first might be used as a signal for a change in discourse structure, namely a change in topic. Adherence to the GIVEN-NEW constraint in this situation, on the other hand, appears to bridge the topic changes and provide textual coherence.

In order to test these possibilities more fully, a further series of text counts was undertaken. Here, however, attention was focused solely on the complex structures (Types 2 through 5), and a tabulation was made of (a) the frequency of each structural type, (b) whether or not the GIVEN-NEW constraint was maintained in each occurrence, and (c) the location of each instance within its paragraph. Three different sources were examined: the 423 page Yeager: An Autobiography (Yeager & Janos, 1985), the 657 page novel Lincoln (Vidal, 1985), and the 251 page novel Changing Places (Lodge, 1975). These three texts were chosen because, at least intuitively, they differ considerable in style. The first, Yeager and Janos, is written in a chatty, almost conversational style, while the Vidal novel is stylistically far more elaborate, with an abundance of complex sentences and an elegant vocabulary. The Lodge text falls somewhere in between the other two: it is somewhat more formal than the first but less so than the second. A total of 1331 pages was examined. The frequency data are found in Table 1.

It is clear from a cursory examination of these data that there is considerable variation in the three texts. For example, the Vidal text appears to use a larger proportion of structures with subordinate clause first than do the other two texts. In order to assess the importance and significance of the ORDER OF EVENTS, MAIN-SUBORDINATE, and GIVEN-NEW constraints in each of the three texts, chi-squared tests were carried out on the frequency data. The results are found in Table 2.

It is clear from Table 2 that the Vidal text differs from the other two in two respects: it observes neither the ORDER OF EVENTS nor the MAIN-SUBORDINATE constraint, while the other two do.

TABLE 1. FREQUENCY DATA FROM THREE TEXTS

TEXT	TEXT PROPERTY	STRUCTURE			
		T2	T3	T4	T5
Yeager & Janos	Frequency	43	19	18	19
	GIVEN-NEW Maintained	37	18	16	18
	Paragraph-Initial	5	6	4	5
Lodge	Frequency	14	3	6	3
	GIVEN-NEW Maintained	9	2	6	3
	Paragraph-Initial	3	2	2	1
Vidal	Frequency	45	12	10	32
	GIVEN-NEW Maintained	41	12	8	32
	Paragraph-Initial	9	3	2	7

T2 = S1 before S2	T4 = S2 after S1
T3 = after S1, S2	T5 = before S2, S1

TABLE 2. χ^2 -TESTS FOR EACH CONSTRAINT

TEXT	ORDER OF EVENTS	χ^2 VALUES	
		MAIN-SUBORDINATE	GIVEN-NEW
Yeager & Janos	6.3*	5.3*	63.1***
Lodge	5.0*	7.5**	7.5**
Vidal	2.3 ns	1.2 ns	76.1***

*: $p < .05$ **: $p < .01$ ***: $p < .001$

However, all three texts adhere to the GIVEN-NEW constraint, suggesting that it is stronger than the other two, or at least more extensive. Both the Yeager and Janos and the Lodge texts provide firm support for both the ORDER OF EVENTS and the MAIN-SUBORDINATE constraints. In these two texts, not only does the order of clauses typically mirror the order of events, but also main clauses precede subordinate clauses significantly more often than the reverse case, thereby providing some support that the order of MC+SC is the normal or unmarked case. However, Vidal (1984), which is the least conversational and most stylistically elaborate of the three, does not. Indeed, the second most frequent structure in this text is Type 5 (before S2, S1).

To determine whether or not the marked structure of subordinate clause first was used proportionally more often in paragraph initial position, a test of the differences between the two

TABLE 3. CONSTRAINTS SATISFIED BY EACH TEXT

TEXT	CONSTRAINT			
	ORDER OF EVENTS	MAIN- SUBORDINATE	GIVEN- NEW	TOPIC CHANGE FOR SC+MC
Yeager & Janos	+	+	+	+
Lodge	+	+	+	-
Vidal	-	-	+	-

+: constraint satisfied

-: constraint violated

proportions for independent samples was carried out for the paragraph initial position for each of the three texts. In this case, only the Yeager and Janos text showed a relative correlation of the marked case with the topic-changing function of a paragraph initial sentence ($z = 1.7, p < .05$). That is, in this particular text, there was a significant correlation between the use of the marked structure SC+MC and paragraph initial position, a correlation which did not exist in the other two texts. Again, this particular text is quite conversational in flavor, while the other two exhibit a more formal, written style. This observation suggests that the use of the marked structure to signal a topic change, at least as defined by paragraph initial sentences, is more of an oral than a formal, written convention, and it is one which should more readily facilitate a hearer, who has no access to written materials, than to a reader, who has fewer demands on his or her short term memory.

To summarize the results of the second study, the GIVEN-NEW constraint is supported by all three texts, but the ORDER OF EVENTS and MAIN-SUBORDINATE constraints are satisfied only by the first two. Finally, the correlation of the marked clause order of SC+MC with a paragraph initial position occurs to a statistically significant extent only in the Yeager and Janos text. These results are summarized in Table 3 for convenience. We now turn to their interpretation.

Interpretation

The first important observation is that the three texts reported in the second study are not homogeneous in terms of their congruence with the several syntactic and discourse constraints. Moreover, there is a considerable intuitive difference among the three texts in terms of style and complexity. The Yeager and Janos text is, as discussed above, almost conversational in tone, and indeed in places it purports to represent oral narrative reporting. The Vidal text, on the other hand, is elaborate, syntactically complex, and filled with what appears to be erudite and polished prose, quite unlike what one normally hears. The Lodge

text lies somewhere between the two extremes of conversational and formal writing. In fact, the considerable differences in apparent style among the three texts motivated their choice for this study.

A second important point is that each of the discourse based strategies appears to be motivated by cognitive processing considerations. The ORDER OF EVENTS constraint can be viewed as adhering to a principle of iconicity (Haiman, 1985) to the extent that the order of clauses directly mirrors the order in which they took place. From a processing perspective, it is plausible to suppose that if a principle of iconicity is operative, structures mirroring the reality which they represent should be easier to process than those which do not. The GIVEN-NEW constraint serves as a linking or bridge between different parts of a narrative within a discourse. That is, in an oral conversation, the inclusion of Given information in an utterance permits the hearer to link that utterance to one which has gone before, thereby providing a sense of coherence in the discourse. Finally, the presence of the unmarked clause order of MC+SC appears to be used to advance a discourse. However, the marked order SC+MC can serve to signal a break or change of direction in the discourse.

It is plausible, therefore, to conclude that when the various constraints are satisfied, the advancement of the discourse is facilitated. The constraints serve to reduce dependence on short term memory, thereby freeing working memory space and resources for such other functions as lexical access and semantic integration. Put somewhat differently, the constraints provide information management protocols which permit the hearer to process messages rapidly and relatively effortlessly. However, such suppositions and conclusions are based on the assumption that the discourse constraints derive their source from the use of oral rather than written language.

If these suppositions are correct, it follows that the constraints should be used more often and should appear more potent in those versions of the written language which attempt to mirror the oral language rather than in those versions which are, to some extent, more removed from the oral conventions. I conclude, then, that the extent to which a particular text adheres to the various constraints based on the oral language defines, at least in part, its degree of formality.

In conclusion, it should be noted that written texts differ considerably in their forms, as we all know. But these differences, which are often intuited or sometimes quantified in terms of sentential complexity, vocabulary choice, or the like, also differ systematically in very subtle ways as well, namely in how they exploit those discourse constraints which serve us so effectively in our oral language use.

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LEARNING TO SELL: AN EXERCISE IN LINGUISTIC REEDUCATION

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By the time we reach adulthood, we already know how to talk, and we already know the sociolinguistic patterns of our language. We also know that when we enter a new field, we will have to acquire its specialized vocabulary. Needless to say, I do not plan to discuss uncommon phrases here under the rubric of a "linguistic reeducation." Rather, what I will be looking at is the way that an indoctrination in direct sales techniques can lead an otherwise linguistically competent person to modify his or her speech patterns and sociolinguistic routines. In this paper I will present various ways of gaining access to an unwilling prospect, closing techniques, and negotiating strategies which I have found to be effective and will attempt to show how such techniques may violate social norms. I will also compare the interactive language of salestalk to the language of impersonal computer-made sales calls, and occasionally suggest sociolinguistically acceptable defensive strategies for customers to use against a well trained salesperson.

Although selling is a very social occupation, it is my contention that sales talk exploits our over-learned social routines. It seems that when anyone knowingly and truly violates a sociolinguistic pattern, we get angry, so most sales approaches just bend the rules a bit. This enables the salesperson to take advantage of what Chaika calls "compulsion in discourse routines...[that is,] the sense of obligation, of having to respond in a certain way" (Chaika, 1982:73-74). Often we get annoyed with ourselves for behaving in the socially correct manner and being suckered while recognizing that the salesperson isn't playing by the rules, but that's what being polite is all about.

This bending-of-the-rules-approach is typified by the phone calls we receive from strangers who ask, "How are you tonight?" Real people, that is, friends, often ask, "How are you?" or "How are you feeling?" but they don't ask about "tonight" unless they have called earlier and know that something was to happen or had already happened. Real people asking how we are tonight

therefore ought to be interested in the reply. But since we know that the person making the call has no reason to ask the question, we volunteer no information. Our quick and automatic "fine" or monosyllabic grunt is enough to satisfy the sociolinguistic demands of the exchange -- and that's the end of our turn! The salesperson moves right into the pitch, and we have to wait for another turn to speak in order to disengage ourselves from the conversation. Sometimes we get our wits together quickly enough to say that we are "rather busy", which seems to be the only socially acceptable excuse in that situation, and can head off a sales pitch, but usually we have to hear a bit before we can end the call.

In order to resist this type of approach, we customers need to modify our behavior. I haven't tried any response other than "I'm busy", which I know works. I wonder what would happen if we actually spoke at length about our health... But if we don't and if we've already said "fine" and given up our right to speak, then my favorite defense, although one I admit I rarely if ever use, [actually, I don't know if I've ever had the courage to use it!] is that of hanging up while in the middle of my next speaking turn. [Credit here to whoever it was who told me about this trick.]

Another opening sales gambit is, "Mrs. X?" She says "yes" somewhat suspiciously, and then the salesperson plunges in. This opening differs from what I would otherwise say if, for example, I were calling the parent of one of my son's friends. In that situation, I ask, "Is this the X household?" get a "yes" and then introduce myself. All that takes time. In my own training involving cold calling, I was taught that the first thirty seconds have to be the best, because I might not get any more than that. Clearly, in such a short time, there's little room for small talk. I confess to using such an approach, and have rehearsed and used a thirty second pitch which I will share with you. I rehearsed this script several times with my trainer before actually using it. The text will make more sense if I explain that I am selling real estate and calling a person who does not wish to engage the services of a broker.

Mr. K.?...This is Joan Savitt from Roberts Real Estate. I live just a few blocks from you and that is how I saw that your house was for sale. I realize that you're trying to sell your home yourself, and I'm not calling today to

convince you to list your house with us. What I'd like to do is to come over and give you any kind of advice you might want to help you sell your home yourself. There's no obligation involved and the reason I am willing to give you this information is that if I can help you sell your home by yourself, then perhaps you will let me help you find a new home or tell some of your friends about me. When do you feel would be a convenient time for me to call on you?

The question I ended with here is not ideal, as I will show a bit later, but it's not bad. Notice that the text covers the essentials quickly but without too much detail and leaves the customer in a position to name a time rather than refusing to see me. This is just what is wanted, since the whole idea of the call is to get into the house, and to get the listing on the second visit. A polite response to my call was therefore the most I could have hoped for.

If you advertise a house for sale, you open yourself to calls from every broker in town. Each of us has our own way of dealing with unsolicited calls. I try to be decent to people making cold calls out of sympathy, but not because I welcome the intrusion.¹ I can assure you that such work is hard to do, particularly since making cold calls violates the norms of polite behavior and at the same time invites rejection. When I'm on the receiving end of such calls, in order to eliminate follow-up calls, I emphasize that I am not interested rather than demurring. In sales, one is taught to "say thanks for the no" -- ever the optimists, we know that one yes in ten is a good ratio. A wishy-washy "no" is a "maybe", and a "maybe" can be converted to a "yes". So if you mean "no", say it. Because once again, politeness does you in.

Although I say "no" before I hang up on a person, I would be the first to admit that I used to just hang up on computer generated calls. Hanging up is a viable defense against these sales pitches, as far as I'm concerned. If you do not hang up, your other defense is silence. But, recently, out of curiosity, I've given these calls more time than they deserve in order to see how they are structured, and to see if a person would ever come on the line. To date, none has.

I find computer calls to be sociolinguistically bizarre. First of all, when we pick up the phone and say

hello, the caller is supposed to speak right away, but the tapes wait too long. I usually think my line is dead. Then out of the blue comes, "Hi, this is Bob from Rent-a-Duck calling to tell you that you have been selected for a free fifteen minute trial duck rental, and all you have to do is" A recent call, rather short and delivered rapidly and with far too much factual detail, asked me to record my name and phone number at the tone; I didn't -- I didn't dare! -- so I never got the follow-up call, and the machine hung up on me. Another call I took was just the opposite; it went on slowly and repetitively for at least five minutes without giving me a chance to speak; I finally just hung up because I could see that the machine would go on forever!

Most preparers of unsolicited computer calls don't appear to have discovered the niceties of our sociolinguistic patterns as of yet, but I just recently received a fairly reasonable one: it gave a quick hello and introduced itself as a computer generated call, and then said, "You may talk back to me after the beep sound." It then made a short pitch about mutual funds and asked me to respond yes or no to indicate whether or not I was familiar with mutual funds. Note that this is a question which engages the prospect in polite talk without asking for anything. I merely grunted but the tape continued, asking me if I wanted some free literature on the topic. I said, "No." The tape continued nevertheless, saying, "If you answered 'yes', please state your name and address [pause] and your phone number." That was the end of the call; there was no goodbye or thank you, but it was timed and written so well that I was compelled to respond at first.

Computer calls are conscienceless invaders of our lives. They work because we are socially groomed to answer our phones, and if we don't want to listen, we just hang up. But unsolicited live calls, by the very fact that a real person is on the line, are hard to hang up on. When a living, breathing salesperson begins what is really an inappropriate conversation in an almost appropriate way, we tend to respond politely. After the opening gambit and our "yes" comes the sales talk itself. Although a sales presentation may be just that -- a presentation of facts about a purchase and a statement of how that purchase will benefit us, that alone does not make a sale. The primary linguistic sales tool is the question. If it's true that salespeople only have thirty seconds to speak, then they need to ask a question after only a brief discourse. As one sales manual says,

Questions...should be worded in such a fashion that no intelligent person would respond with a no....[because] the best habit [a customer] can form is the habit of agreeing with you and saying yes to you (Burstein, 38-39).

Any question forms which invite disagreement are to be avoided, while questions which invite assent are of course to be maximized. Salespeople are taught to say "Doesn't this" and "Isn't this" and to avoid "Don't you think that". These, of course, are tag questions which invite automatic agreement. For face-to-face contact, the manual that I just cited also suggests two kinesic approaches to sales: it advises the salesperson to "nod your head in assent while asking the question" and also suggests involving the prospect physically: we are told that

asking the prospect to perform minor innocuous acts, such as [those induced by saying] "Please hand me that paper" will start the habit of obeying your requests in his behavior patterns (Burstein, 1969: 39).

Another manual also suggests a physical activity for the customer; I particularly like the justification:

Many successful salespeople like to involve the buyer in the calculations of the sale by giving them paper and pencil and having them make their own notes of financial details along with the salesperson. This not only requires concentration on the purchase, it prevents the buyer's mind wandering... (RESH, 101).

The use of tag questions is one way of gaining agreement, and tags are effective as long as the customer does really agree. But the tag question isn't sufficient, as can be seen by examining the following commonly given suggestions: Don't say "think" -- say "feel", that is, appeal to emotions rather than to intellect. Don't say "if you buy this" -- say "when you buy this", that is, use "when" since it assumes that the action has been taken. But don't ask, "When can I see you?" -- say, "Let's get together on this. Which is better for you, Tuesday or Wednesday?" This last strategy is effective because one of the secrets of sales is to arrange for your next move with the permission of the buyer. This is best done by giving the

buyer a choice among options, any of which would be satisfactory to the salesperson. It seems to me that it is important that the choices be limited. I have noticed that when I call for an appointment with my doctor six months down the line, the person making the appointment is still likely to suggest a few specific times to me, rather than ask me to name one. We seem to do better with a restricted field. So I might ask whether I should call someone at work or at home -- but not whether I should call at all!

Sales are only good if the deal is closed. In real estate, salespeople are advised to "make sure the buyer comes to the office so that the salesperson can drive him to see the house. After the showing, the buyer can't say that he'll think it over and get in his car and leave" (RESH, 102). If the buyer wants the property, then whatever has been proposed or agreed upon must be put into writing and signed. Although a salesperson may sometimes simply say, "Sign here, please," in real estate, that cannot be done, and in any type of sale, it's more likely that other closing techniques will be used. For example, you may be asked if you spell your name with an A or an E, where your response of information rather than an objection to the question itself closes the deal (Burstein, 55) or the salesperson may use small requests to begin, on the order of the "Would you hand me that pencil?" referred to above, as in, "What I'm going to need now is..." Again, if the customer doesn't stop the procedure, it goes on, and ultimately, the sale is consummated.

As you see, you must object at some point to stop a sale if it is being closed properly. And salespeople know how to counter your objections! Burstein, whom I have been citing, makes the observation -- but I'm not sure it's true -- that

many times a so called objection is only a form of a request for additional information. Some people prefer to advance these questions as a negative to get the answer more succinctly, (Burstein, 45)

and another sales manual claims that if a customer suddenly introduces new objections, it is just a device used to gain time by a purchaser who is ready to sign, so that that person's objections should be easy to counter (RESH, 101).

Not all objections are made at the time of final closing, and it is often necessary for a salesperson to

respond to them with "cushions" before addressing the issues themselves. From a linguistic point of view, cushions are interesting because they change the subject from the buyer's "I" to an impersonal "they", as for example, in stock responses to objections such as "It is not unusual for people to feel the same way you do," or "Many people would feel that way." At other times, the salesperson absorbs the attack by saying, "I can certainly understand how that might be a concern," (Roberts Advanced Training).

A cardinal rule of sales is that there is no value in winning an argument with a customer. This often goes counter to our feelings but there is no point in making customers angry over anything. Cushions are meant to deal with anger-evoking situations and to counter objections without angering the customer. In real estate transactions, I am frequently in the position of negotiating a contract between two parties, both of whom are displeased by the terms under discussion. In such a situation, my strategy is to pick the most acceptable item under discussion and say, "Can you live with this part?" If I get a "yes", then I suggest a response to the rest of the deal. Another way to deal with these situations is to pick one of the most objectionable of the terms and say, "If it weren't for that, could you live with this?" and go from there. I should add here that artful paraphrasing is essential at this point, since I am usually taking heat at both ends of the negotiations and must convey the feelings and wishes of each party in such a way that buyer and seller come to an agreement rather than just walking away from the deal entirely.

I've sold millions of dollars of real estate in the past few years, but I'm still a linguist at heart. I couldn't help wondering if my language patterns had really changed, but when I considered them analytically, I found that they had. For example, although I may make hundreds of business calls a week, I find that I hardly ever use the phone for social calls, and when I do, I feel compelled to say, "The reason I am calling is..." I monitor my speech more carefully, which is probably for the better, but I also, as a result of training and extensive practice, knowingly override sociolinguistic restraints, which is undoubtedly for the worse. So when your phone next rings, be careful!

NOTES:

¹Some other approaches are also effective. Mary Ritchie Key says she asks, "Who is this?" if she does not recognize the caller. That stops the conversation in its tracks. Bill Sullivan recounts that his son always answers the phone with a woof, and at his next speaking turn, if he does not wish to speak with the caller, emits a low whine. Then, in the midst of the caller's next turn, he holds the phone at arm's length, says: "Spot, are you playing with the phone again?" and hangs up.

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VII

HISTORY OF LINGUISTICS

BEYOND WHITNEY'S "TENTH LECTURE":
NEW HORIZONS IN COMPARATIVE LINGUISTICS

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In my study of comparative and historical linguistics over the past two decades, I have often wondered about the common prejudicial attitude, still current among linguists today, against extending the comparative method to the investigation of remote relationships and great time depths. I have come to learn that this attitude dates back to the nineteenth century, and was clearly articulated by, among others, the great American linguist William Dwight Whitney (1827-1894). In his famous "Tenth Lecture", Whitney gave reasons for his dictum that: "Linguistic science is not now, and cannot ever hope to be, in condition to give an authoritative opinion respecting the unity or variety of our species." (Whitney 1867:383) Over a century later, we find a similar belief, restated by a highly respected linguist of our time:

Although some of Whitney's views may not have been immediately adopted, they are in large part the ones that we now hold, such as the view that there is little evidence for proposing a relationship between Indo-European and Afro-Asiatic; or that there is little likelihood of establishing interrelationships beyond a certain time, on the basis of the materials we now know. (Lehmann 1967:225)

Apparently this viewpoint has been passed along, quite uncritically, since Whitney's time. Many examples could be cited from the literature to illustrate this 'kneejerk reaction', e.g.: "Swadesh's proposals as to linguistic prehistory can elicit prejudgment and some of the passion reserved for heresy." (Dell Hymes, in Swadesh 1972:261) Just as in the religious context, the reaction against linguistic heretics is automatic and unthinking. The possibility that a hypothesis may be worthy of careful scientific analysis is not even considered.

Now I have long been an admirer of William Dwight Whitney. I have owned his classic Sanskrit Grammar since high school days, and have turned to it whenever a clear and erudite exposition of that language was needed. However, I must respectfully dissent from some of the pronouncements in the "Tenth Lecture" regarding the limits of linguistic science. They remind me of the 'famous last words' of other naysayers. It is ironic that Whitney's contemporary, the great American astronomer Simon Newcomb (1835-1909), is probably better known today as the scientist who declared airplane flight 'impossible', than for his many solid accomplishments.¹ It is clear that even the most brilliant scholar of his time is in no position to predict, or deny, the advances that

may be made in his science in the future.

As it turned out, advances both in the collection of linguistic materials, and in linguistic methodology, have made it possible for the investigator of today to go beyond the self-imposed limits of the past. Just as the Wright brothers proved Simon Newcomb wrong, comparative linguists today are demonstrating that Whitney was premature in setting the limits of linguistic science. Let us now examine the reasons given by Whitney, and parroted by the modern negativists (paraphrased):

(1) 'The processes of linguistic change have obliterated all traces of any earlier unity (if there ever was one)' (pp.386-388): In fact, there is a growing consensus that the rate of linguistic change closely parallels the rate of cultural change in general. Prior to the Neolithic, and the spread of agriculture, the rate of change becomes exceedingly slow. (Diamond 1959:219-220; Anttila 1972:380; Wescott 1974:103ff.) If this is indeed so, the task of remote linguistic comparison and reconstruction becomes much less formidable than the negativists would have us believe.

(2) 'It is impossible to distinguish genetic from accidental resemblances.' (pp.389-391): The principles of multilateral comparison (Dolgopolsky 1964; Greenberg 1966) and of the comparison of proto-languages (Trombetti 1905; Illič-Svityč 1967) make it possible for us to overcome this difficulty. True, as Whitney stated, comparison of any two random languages will turn up a number of chance resemblances. However when we increase the number of languages being compared, or, whenever possible, compare reconstructed proto-languages, it soon becomes clear which resemblances are fortuitous and which are genetic. The former are restricted to the binary comparison, while the latter will recur across three or more language groups or proto-languages. Even with no historical information, the classic false etymology cited by Whitney (Polynesian *mata* : Modern Greek *máti* 'eye') is easily shown to belong to the accidental type, since the Greek form is isolated and not reconstructible, as such, in Proto-Indo-European. On the other hand, the true global etymologies being assembled by multilateral comparativists are clearly different: the same 'coincidence' running through several language families is effectively removed from the realm of chance resemblance. (See Appendix)

(3) 'There is insufficient data for remote comparison.'
 "The difficulties in the way of a fruitful comparison of roots are altogether overwhelming." (p. 392) On the contrary, we are finding that much can be learned from even a relatively small amount of linguistic data, provided that the data includes a selection of the most stable and basic lexicon: names of body parts, pronouns, and grammatical elements. (Dolgopolsky 1964; Greenberg 1966, 1987; Wescott 1976) Also, the materials for the multilateral comparison of word roots have increased dramatically within the past few decades. So while Whitney despaired at finding common radical elements "amid the blind confusion of the American languages" (p.393), we have just this year seen the publication of a compendium listing about 2,000 lexical elements uniting the Amerind languages over the greater part of the Americas. (Green-

berg 1987; this book has predictably been greeted by a hostile reaction from the negativists referred to above. The fact is, however, that none of these critics can claim to have investigated the data nearly to the extent Greenberg has; and none of them have a better hypothesis to offer.) Some other examples are cited in the bibliography below.

So we see that the obstacles envisioned by Whitney are indeed difficult, but that is not to say impossible! While Whitney was correct in pointing out the possible pitfalls, he went beyond his proper role as a scientist in making pronouncements as to the 'impossibility' of success in certain lines of investigation. Worse yet, succeeding generations of linguists, who have slavishly passed these dicta along, without any investigation of their own, have abrogated their scientific duty. The result is a widespread atmosphere of anti-scientific negativism and quasi-religious dogmatism, which are an embarrassment to our present-day community of 'scientific' linguistics. Unfortunately, the malaise is perhaps worst here in North America, and especially among Americanists. (These issues are thoroughly discussed in Greenberg 1987, and Ruhlen 1987b.)

On the other hand, there fortunately exists a minority of scholars who have gone ahead in investigating remote linguistic relationships and possible global connections. Besides those already cited, one could mention Saul Levin, the past president of LACUS who is working on the comparative grammar of Indo-European and Semitic. (Levin 1971) Mary Ritchie Key, who has been in the forefront of remote Amerindian comparison, has also lately worked out methods for controlling semantic change and 'semantic space' in distant relationships. (Key 1985, and forthcoming) Other multilateral and remote comparison projects are in progress in North America, the Soviet Union, and Israel. (See the surveys in: Ruhlen 1987a, 1987b; and Shevoroshkin, forthcoming.)

In conclusion, we may still respect and learn from William Dwight Whitney, allowing for the advances made since his time. However, we can no longer uncritically accept his dicta as to the limits of linguistic science. We must rather investigate each hypothesis, using the scientific methods and tests that have been developed before Whitney's time and since. Kneejerk prejudicial reactions have no place in a scientific community. This observation by a space scientist may well be instructive to us as well: "The real benefits come not from what you knew would happen but from the discoveries and capabilities you run into when you open the new horizon."²

NOTES

¹ "The example of the bird does not prove that man can fly. Imagine the proud possessor of the aeroplane darting through the air at a speed of several hundred feet per second. It is the speed alone that sustains him. How is he ever going to stop?" Simon Newcomb, 1903 (Mencken 1942).

² David Black, in Newsweek, January 19, 1987.

APPENDIX: Global Etymologies

These are some examples of the 'global cognate sets' being assembled by comparative linguists, using multilateral comparison. All that we can yet say, with confidence, is that there exist a substantial number of such global lexical resemblances, which at least indicate very ancient layers of vocabulary which have left residues in most, if not all, known languages.

1. 'fire; hot': phonotype HOTV:

- Niger-Kordofanian: Bantu *yótò 'fire' (Guthrie 1967)
 Nilo-Saharan: ot~uto~udu 'fire' (Greenberg 1966)
 (Nostratic: **qot̪i 'fire') (Illič-Svityč 1976)
 Afro-Asian: *ḥt-/ht-
 Indo-European: *Hēt- (e.g., Avestic ātarš 'fire')
 Dravidian: *otA-
 Altaian: *ōti (e.g., Mongolian oči 'spark')
 Ainu: *hu(n)či: unči~unči 'fire, hearth';
huchi~fuchi~fuji 'fire (goddess)' (Piłsudski 1912; Batchelor 1938)
 Indo-Pacific: ote~utu~atha 'fire' (Greenberg 1971)
 Amerind: *oti 'fire' (Ruhlen 1986; Greenberg 1987)

(The Indo-Pacific forms were suggested by Merritt (Ruhlen).)

2. 'root; sinew; rope': phonotype SIRV:

- Khoisan: so~tso~acu 'sinew, (thread)' (Greenberg 1966)
 Nilo-Saharan: tsera~šillei~šul 'rope' (Greenberg 1966)
 (Nostratic: **/s/ira) (Illič-Svityč 1967)
 Afro-Asian: *šr- 'sinew, root'
 Dravidian: *cir- 'root'
 Indo-European: *ser- 'thread, string'
 Uralian: *särA- 'sinew, root'
 Altaian: *sirä- 'root, to sew'
 Kartvelian: Georgian zaryvi 'vein, muscle' (Bouda 1949)
 Basque: i-zorro 'root' (Bouda 1949)
 Burushaski: tsər'əš 'root' (Lorimer 1962)
 Sino-Tibetan:
 Tibeto-Burman: *r-sa 'vein, sinew, root' (Benedict 1972)
 Amerind:
 Chibchan-Paezan: sira-(ngua) 'root', sira 'thread' (Greenberg 1987)
 Equatorial: asiraa 'root' (Matteson 1972)
 Hokan: asli 'rope' (Greenberg 1987)

(Thanks to suggestions from Vitaly Shevoroshkin.)

APPENDIX:
Global Etymologies (continued)

3. k'ati 'bone' (from Ruhlen 1987c):

Afro-Asiatic BONE. Semitic: Arabic qaṣṣ 'chest bone.' Old Egyptian kṣ, Coptic ka(a)s. Berber: Tuareg eḡes, Shilha ixs (<iḡs), Kabyle iḡes. Proto-Cushitic *m-qS. Proto-Chadic *kṣ(j), Hausa k'asi, Karbo ka:so, ka:si, Gerka ḡas, Logone ḡaṣe, Somrai guseṅ, Sokoro oseḡḡi. [N219]

Omotic BONE. Badditu (mi)qi(-te) (<*miqqite <*miqSite), Haruro mekeṭe, Wolamo maqa-tta. [N219]

Indo-European BONE. Proto-Indo-European *kost. Italic: Latin costa 'rib'. Slavic: Old Church Slavonic kostb. [N219]

Uralic BONE. Mordvin kaskä, kaske 'sacrum, sacral bone'. [N219]

Dravidian BONE. Malto qot^S-lo, Kurux xōt^S-ol. [JB86]

Miao-Yao HARD. Proto-Miao-Yao *kat, Cheng-feng Miao ko? 'hard, stiff', Haininh Yao kat 'congeal, freeze'. [PB75]

Daic HARD. Kam-Sui: Sui ka. Proto-Tai *ka 'hard, firm, robust'. Ong-Be kiet 'coagulate'. [PB75]

Austronesian HARD. Proto-Austronesian (Dempwolff) *(ma)kat'. [PB75]

Amerind BONE/HARD. Almosan-Keresiouan: Caddoan: Pawnee ki:su? 'bone', kasis 'be hard', Arikara kaṡṡ 'hard', Wichita kas 'hard', Keresan: Santa Ana sk'asi 'hard'. Penutian: Central Sierra Miwok kaṭṭa:ky 'hard', Chinook qot^{So} 'bone', Lower Umpqua qasqas, Zuni k'usa 'be hard', Chitimacha kat^{Si} 'bone', Wappo t^Siti 'bone', Yuki k'iṭt 'bone'. Paezan: Eten koč 'to dry', Itonama k'osa 'to dry'. [JB86/JG87: Amerind 141, Penutian 102]

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TOWARD A HISTORY OF AMERICANIST LINGUISTICS

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0.0 *Introductory Observations*

0.1 With the 500th anniversary of the discovery of America by Europeans quickly approaching, it appears time that *linguists* in North America become more generally aware of their own heritage, for it was soon after the invasion of this continent by Europeans that an entire new arena for the study of language was opened up. Anthropologists concerned with language have been much aware of *their* traditions, in particular those trained by Franz Boas from the turn of this century onwards such as Edward Sapir (e.g., 1911) and Alfred Kroeber (e.g., 1939), and the generations of scholars following them: Mary Haas (b.1910), Dell Hymes (b.1927), and Regna Darnell (b.1943), to mention just one each for three such generations.

0.2 It appears that most North American linguists, by contrast, have been much more focussed on their European heritage, with William Dwight Whitney (1827-1894), trained at German universities in the early 1850s, usually taken to mark the beginning of American linguistics. Bloomfield's first linguistics textbook (Bloomfield 1914), which was modeled after the books by Whitney (1867, 1875) and European ones (e.g., Paul 1880; 4th ed., 1909), reinforced this impression, and many present-day students of linguistics are frequently made to believe that linguistics as a science began even after Bloomfield and the generation of scholars following him, thus relegating all previous work to the dustbin of history.

0.3 This selective and restrictive view of the linguistic past in North America has had its cost, for it seems to me that North America has produced many mechanics of the trade, but few scientists aware of their heritage. The present paper is therefore intended to open a window toward the recognition of what I may call 'the Americanist tradition in linguistics' by a larger number of present-day linguists.

1.0 *Phases in the Study of North American Indian Languages*

In his brief sketch of the study of Mesoamerican Indian languages of 1983, the late Jorge Alberto Suárez (1927-1985) distinguished three phases in the history of Americanist linguistics; the first beginning with the arrival of missionaries in New Spain in 1524 and lasting roughly to the end of the 17th century. (Maybe I should point out that I regard Mexico as a part of North America; it's from there, and with Cortés' conquest during the early 16th century that European study of Amerindian languages began.) This first phase is properly called the period of 'missionary linguistics'. The second phase, according to Suárez (1983:5) began in the 19th century, the 18th century witnessing a considerable decline in the work on American Indian languages, probably as a result of the Enlightenment preoccupation with philosophical and universal grammar, not to mention its concern for the development of logical systems of communication (cf. Rowe 1974:367). The third phase covers the present century. No doubt, this classification is much too schematic, especially with regard to the last two periods, and probably requires revision and refinement. (Indeed, other scholars, e.g., Cowan 1974, distinguish 'three main traditions'

according to the place of origin of the missionaries, French, English, and Spanish, as they arrived at different times, in different places, and frequently with different attitudes.)

1.1 I won't say much about the missionary period here (for some details, see Suárez 1983:1-5), except to say that it was characterized by the activities of the Franciscan, Dominican, and Augustinian friars (listing them in chronological order of their arrival in Mexico), whose objective it was to learn enough of the languages of the natives that they could carry out their missionary work. In order to familiarize themselves with the indigenous languages, these missionaries as well as some Jesuits (who, at least in Central and South America, usually concerned themselves with the education of the upper classes only) compiled wordlists and developed grammars. Although these Indian languages were quite different from the European languages, the structure of Latin was employed in their analysis (cf. Dümmler-Cote 1987), and Antonio de Nebrija's (1444-1532) grammar of Spanish, first published in 1492, though the first vernacular grammar in Europe not devoted to either Latin and Greek, served many of them as a model. Nebrija's *Gramática castellana* was however not much different from these traditional grammars, and this fact may have reinforced the missionaries' belief in the adequacy of the categories of the structure of Latin for the description of American Indian languages. (For an account of 17th-century missionary work in the British colonies in North America, see Guice 1987; cf. also Wonderly & Nida 1963, Wolfart 1967, and others.)

With regard to the English in North America (on which see Hallowell 1960:23-34) -- I am excluding the missionary work in New France here (on which see Hanzeli 1969) -- mention should at least be made of the in fact pioneering work of missionaries such as John Eliot (1604-1690), Thomas Mayhew (1592-1682), Experience Mayhew (1673-1758), and Cotton Mather (1663-1728), who produced translations of biblical and other devotional texts into half a dozen different Indian languages, frequently compiling dictionaries or writing grammars of these languages on the way. Several of these works were reissued by John Pickering some 150 years later (see below). But the most important and influential work was no doubt John Eliot's *The Indian Grammar Begun* of 1666, basically a grammar of the Massachusetts language or Natick modeled after the structure of Latin, but produced with a thorough acquaintance with the native language and the help of informants (cf. Miner 1974 and Cowan 1984, for details). This probably first American Indian grammar written in North America was republished by Pickering in 1822 and received critical attention by later Algonquianists, beginning with James Hammond Trumbull (1821-1897), who was to criticize Eliot's efforts to 'cast [Natick] into a classical mould' and, as a result, for not recognizing important grammatical features properly (Trumbull 1871:60; Cowan 1984:294-95; for a different view of Eliot's achievement, see Smith 1979:31).

The other influential missionary linguist of 17th-century New England was Roger Williams (1603-1683), a close contemporary of Eliot, whose *Key to the Indian Language* of 1643 (reissued by Pickering in 1827), has received due attention by 20th-century Algonquianists (e.g., Haas 1967), and has recently been characterized as

a roughly 200-page long phrase book and description of Indian culture which contains a respectably large number of words, phrases, and sentences of Narragansett, another extinct Algonquian language [like Massachusetts], formerly spoken in Rhode Island and only dialectically different from Massachusetts. (Cowan 1984:294).

But as I said earlier, it is not my intention to spend much time with the early phase of Amerindian linguistics in this paper, though it deserves much more attention than it has hitherto received (cf. Haas 1978:110-12).

1.3 The second phase in the study of Amerindian languages will occupy us more than the first, since it is this period during which the kind of work was undertaken that shaped much of the later research. Characteristically, most of the pioneers of this new stage were no longer missionaries or ecclesiastics, but people of public life such as lawyers and politicians. Several of them were European-born, among them the French Pierre Etienne (alias Peter Stephen) Du Ponceau (1760-1844) and the Swiss Albert Gallatin (1761-1849), but there was a growing number of scholars born in North America, the most distinguished of whom was John Pickering (1777-1846), if we exclude Thomas Jefferson (1743-1828), the third president of the United States, who showed an early interest in the study of American Indian languages and encouraged the work of others in this area, especially during his tenure as president of the American Philosophical Society in Philadelphia (1797-1814). However, their work was by no means a complete break with tradition, though it is true that they attempted to study the American Indian languages on their own terms, and not to impose on them the Latin model.

For illustration, I may cite a lecture by a "pastor of a church in New Haven", given at a meeting of the Connecticut Society of Arts and Sciences on 23 October 1787, and which was published in the following year under the title "Observations on the Language of the Muhhekaneew Indians; in which the extent of that language in North-America is shown; its genius is grammatically traced; ...". This 17-page pamphlet by Jonathan Edwards (1745-1801) is of distinct interest for several reasons, including its serving as an example for the kind of work that preceded that of Du Ponceau, Pickering, and others toward the end of the 18th and in the first four decades of the 19th century. (I am thinking of the naturalist Benjamin Smith Barton [1766-1815], a member of the American Philosophical Society since 1789, who in 1797 published his *New Views of the Origin of the Tribes and Nations of America*, whose argument in favour of the Asiatic origin of the Indians must have aroused interest in their languages too.) In this 1787 paper, Edwards 'asserts' from his 'own knowledge', as he says, that "the languages of the several tribes in New England, of the Delawares, and of Mr. Eliot's bible [i.e., Natick], are radically the same with Mohegan" (1788:5). This is however not merely an assertion on his part, but Edwards demonstrates, through a comparison of some 60 vocabulary items, phrases, and grammatical features that "the languages of the Shawanese and Chippewaus is radically the same with Mohegan" (p.6), but that "Mohauk, which is the language of the six nations[,] is entirely different from that of the Mohegans" (p.9). In other words, Edwards identified a number of Algonquian languages as structurally identical, and Mohawk, an Iroquoian language, as unrelated, an observation which is basically correct. But there is at least one other observation in Edwards' paper, which deserves our special attention, in particular if we realize that it was made before Sir William Jones' famous statement about the relationship between Indic and the major European languages was published, and at the other end of the globe. After having provided parallel data from Mohegan and Chippewau (now usually referred to as Ojibwa), Edwards concludes:

It is not to be supposed, that the like coincidence is extended to all the words of those languages. Very many words are totally different. Still the analogy is such as is sufficient to show, that *they are mere dialects of the same original language*. (Edwards 1788:8; my italics: KK)

This is no doubt an important statement as it suggests to us that the principles of comparative linguistics and the establishment of language families did not require Jones' celebrated passage in his Third Anniversary Discourse of 2 Feb. 1886 (Jones 1788). However, as in the case of Jones, it required someone to follow up on this hint. Friedrich Schlegel, in his *Über die Sprache und Weisheit der Indier* of 1808 did it for Jones, and it was none other than John Pickering who republished Edwards' paper in 1823, together with copious notes of his own.

Interestingly enough, unlike Edwards, who obviously had undertaken field work, Du Ponceau and Pickering relied exclusively on written documents, especially grammars and other accounts by missionaries; moreover, they did not venture much beyond Algonquian, and so it remained a work to be done by later generations of scholars to establish the various American Indian language families, the most famous of these classifications being of course John Wesley Powell's (1834-1902) of 1891, which in recent years have received renewed attention. Indeed, most of the work of Du Ponceau and Pickering was concerned with the preservation of Amerindian language material provided by others. The bulk of Du Ponceau's writings on Amerindian languages stem from the last 25 years of his life, by which time comparative-historical linguistics had made considerable advances in Europe (I am referring to the work of F. Schlegel, Rask, Bopp, Grimm, and Humboldt of the years 1808-1822), including the classification and compilation of samples of a great number of North American Indian languages in tome III, part 3 of Adelung & Vater's influential *Mithridates* of some 250 pages (1816:170-424). Although he had written earlier on Amerindian and by 1816 translated the grammar of the Delaware Indians by the Moravian missionary David Zeisberger (1721-1803), it was only in 1819, in the first volume of the *Transactions of the American Philosophical Society*, that his first publication appeared (cf. Wissler 1942, for an appraisal of Du Ponceau's Americanist work). However, it was in this "Report on the General Character and Forms of the Languages of the American Indian" that Du Ponceau introduced (p.xxvii) the term 'polysynthetic' into linguistic nomenclature, a term that certainly *fit fortune* as we may see in subsequent typological work, most prominently in Sapir's *Language* of 1921, chap. six ("Types of Linguistic Structure," 127-56).

Similarly, Pickering, who had received a good grounding in classical philology at Harvard, though, professionally, he was a lawyer and (like Du Ponceau) a diplomat for a few years, was a linguist by avocation. He first worked in the classical field in his spare time and published a dictionary of American English in 1814, but it was from 1820 onwards, when he published his *Essay on a Uniform Orthography for the Indian Languages* that we see him devoting all his attention (outside his many public offices; cf. Edgerton 1943:28n.17) to the study of American Indian languages, apart from preparing second and third editions of his Greek-English dictionary in 1829 and 1846. It was soon after the publication of his *Essay* that Pickering got in touch with Wilhelm von Humboldt through the offices of the young George Bancroft (1800-1891). Bancroft, who had received a doctorate at the University of Göttingen in 1820, had moved to Berlin for further study and made it a point to seek out the famous man, who by that time had retired from public life to devote himself to linguistic study. (The correspondence between Pickering and Humboldt continued until the death of the latter; cf. Müller-Vollmer's [1976] edition of Humboldt's letters to Pickering.) But instead of turning to empirical research at a time when a large number of Indian languages were still spoken, Pickering, like Du Ponceau (and, understandably, Humboldt), devoted most of his energies to the preservation of existing materials, beginning with a new edition of

John Eliot's *Indian Grammar* in 1822, followed in 1823 by that of Edwards' 1787 essay already mentioned earlier, Roger Williams' *Key to the Indian Language* in 1827, and two other texts in 1830 and 1833 (cf. Edgerton 1943:27, for details).

V.V. Belyj, in a paper on Du Ponceau as 'the father of American philology', nevertheless concedes that he was a transitory figure (Belyj 1975:42), a judgement which agrees with H. Kenny's assessment of Du Ponceau some twenty years earlier, and in which Kenny (1957:204) includes Pickering too. Indeed, it appears that it required the foundation of learned societies, such as the American Ethnological Society in 1842, and the establishment of research institutions, such as the Smithsonian in 1846 and the Bureau of American Ethnology in 1880, to allow for better coordination of research efforts and scientific advances through improved lines of communication. (It is interesting to note that Pickering must have felt the desirability of such organizations since it was he who founded the American Oriental Society in 1842.) It appears justified therefore to regard the second phase of Americanist work as stretching from the late 18th century (perhaps taking Edwards' paper of 1787 as a starting point) to the 1840s, when these various agencies and societies were established and Du Ponceau and Pickering died (in 1844 and 1846, respectively). Indeed, we may say that the third phase, beginning in the second half of the 19th century, is characterized by an increase in professionalism in Amerindian linguistics; Du Ponceau and Pickering had remained amateurs in the best sense of the term.

Until now, I've said little about the Geneva-born financier and statesman Albert Gallatin (1761-1849), mentioned at the outset of this paper. His role in the development of Amerindian ethnology has recently been thoroughly treated by Robert Bieder in his book *Science Encounters the Indian, 1820-1880* (Bieder 1986:16-54). It was Gallatin whom Powell later (1891:9) called a Linnæus of Amerindian linguistics for his classification of the Indian languages of North America in 1836. His 422-page "Synopsis of the Indian Tribes", published in a volume entitled *Archæologia Americana* and edited by Lewis Cass (1782-1866), governor of Michigan (1812-30) with a life-long interest in Indian culture, constitutes, as Stevens (1957:47) has pointed out, a summation of the work of Du Ponceau, Pickering, and others. Gallatin produced two more lengthy studies, one on the Indians of Central America, including Mexico (Gallatin 1845), the other as a 160-page introduction to Edward Everett Hale's (1822-1909) *Indians of North-West America, and Vocabularies to North America* (Gallatin 1848). But it is for his classification of North American Indian languages that he is best known. Yet Stevens (1957:47) may be right in saying that Gallatin's work marks "not only the summation of an era in Indian linguistics but [also] the beginning of a new era", if we take note of the fact that he assumed a leading role in the foundation of the American Ethnological Society and subsidized the publication of the first two volumes of its *Transactions* (1845-47). Indeed, Gallatin was its first president, and because of his poor health, most meetings were held at his house (cf. Bieder 1986:43-44). Considering these facts, we might find it difficult to clearly divide the history of Amerindian linguistics into periods and to draw sharp dividing lines between the second and third phase of its development. However, it is probably the move away from the gentleman scholar to the professional in matters Amerindian during the 1880s and 1890s that can best be offered as the beginning of the new era.

1.4 In this paper, I can be brief as regards the third important phase in the study of American Indian languages, largely because much more historiographical work has been done on it (albeit not yet in an organized fashion). There has been a tendency to regard the foundation of the American Anthropological Association in 1879 and,

especially, the arrival of Franz Boas (1858-1942) on the Continent several years later as the beginning of the new phase, though 'transition' may be a more apt term (cf. Darnell 1970). But there is a danger in downplaying the important work on Amerindian language and culture undertaken by others, many of them American-born: I am thinking in particular of Daniel Garrison Brinton (1837-1899) and John Wesley Powell (1834-1902) as the prime movers, though the work of James Constantine Pilling (1846-1895), of the Swiss-born Albert Samuel Gatschet (1832-1907), and of Horatio Emmons Hale (1817-1896) deserves particular mention as well. Indeed, as Gruber (1967) suggests, Boas did not create an intellectual tradition in North American ethnology or ethnography, but joined a well-established, ongoing but changing enterprise when he came to the United States in 1886. However, Boas soon began to play an important institutional role in the reorganization of American anthropology (cf. Stocking 1968:281-85, for details) and, although mainly self-trained in the study of Amerindian languages, contributed significantly to the professionalization of the field by producing a considerable number of students who largely shaped ethnological research in North America. On the anthropological side, we may refer to Albert Louis Kroeber (1876-1960), Boas' first doctoral candidate at Columbia in 1901, Robert Harry Lowie (1883-1957), Ruth Fulton Benedict (1887-1948) or to Margaret Mead (1901-1978), to mention just a few; on the linguistic side, the name of Edward Sapir (1884-1939) appears to overshadow many other important Americanists: I am thinking in particular of Truman Michelson (1879-1938).

Furthermore, I might list, at the risk of engaging in academic name dropping, a host of students of Sapir (and a few, especially Harry Hoijer [1904-1976], of Kroeber) who made the study of American Indian languages their prime objective, e.g., Charles Frederick Voegelin (1906-1986), whom Kroeber had sent to Sapir for completion of his training, Morris Swadesh (1909-1967), Mary R. Haas (b. 1910), Stanley S. Newman (1905-1984). However, in all this we should not forget to mention the important work on American Indian languages, in particular those belonging to the Algonquian stock such as Fox, Menominee, Ojibwa, and Plains Cree, done by Leonard Bloomfield (1887-1949) who, at least in this field, was nobody's student, but who, being trained in Indo-European linguistics, introduced successfully the historical-comparative method into the study of the indigenous languages (e.g., Bloomfield 1925; cf. also Sapir's [1931] appraisal of Bloomfield's work in this field).

2.0 Concluding Remarks

What has been said above, is rather preliminary. Indeed, I believe several scholars attending this meeting are much more knowledgeable, not only with regard to actual work on American Indian languages, but also where the history of the subject is concerned. So I feel I must ask them for their forbearance: I promise to do more -- and more substantial -- work in this area in years to come, as I feel that it is in this field that the true Americanist tradition, and, to no small degree, the linguistics tradition in North America will be found.

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VIII

HISTORICAL LINGUISTICS

A THEORY FOR LANGUAGE CHANGE:
BARNETT'S THEORY OF CULTURAL CHANGE

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The discipline of linguistics has long needed a theory of language change that encompasses and explains change in both extant and extinct languages. This theory should cover all aspects of language change (primary and analogous or adaptive change, which includes drift, trend, and tendency) without recourse to either the ubiquitous unexplained, unexplainable, undefined, and undefinable 'metaconditions' and 'metatheory' so often used in the literature to mask problems inherent in the theoretical framework being presented. Language change theory not only should include time as a major variable, but also should assert that all language change is the result of the cognitive efforts of individual men, women, and children. It should also recognize that language is not superorganic, cannot act apart from its users, cannot manipulate and change itself, or demand and fulfill various trends, drifts, and tendencies evoked by itself within itself. These requirements are contrary to current writings on linguistic change and linguistic change theory. That which is presented in the literature today could well be characterized as the 'bits and pieces' theory of language change in which the presented theory is restricted to the small segment of the particular language under discussion. What is discussed in current scholarship lacks the capability to encompass all languages and their systems and subsystems. Furthermore, most of the models given are static models, not involving process at all. Only a theory incorporating process can adequately cope with language change. Such a theory is H. G. Barnett's theory of innovation and cultural change which is presented in detail in two publications: Innovation: The Basis of Cultural Change (1953), and Qualitative Science (1983).

Description of Barnett's Theory: Kroeber, writing on invention, stated that

"...an analysis of the history of invention clearly demonstrates that all inventions [or innovations] consist of new combinations of old parts, not new parts. The new is often a new function, culturally significant, socially accepted, and which we can name" (693;727).

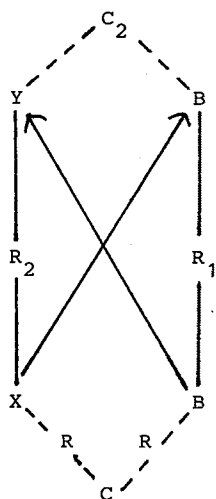
However, Barnett places emphasis on how new patterns, composed of old parts, take shape rather than focusing on the inventions per se. What is hinted at in the literature, but more often not recognized, is that there is a sameness in the process of the reorganization of the old elements in all inventions by the people of all cultures. This process can be understood as a combination

of the processes of equation, discrimination, redintegration, assimilation, and projection in accordance with relevant patterns (Barnett 1983, 142) which are displayed in Figure 2 below of Cell 41 from 'The Chart' (1983, 87). A new combination of parts is necessarily a recombination. Before the recombination (the innovation) can occur there must be an analysis of two existing complexes (the stimulus configuration and the prototype configuration) so that a part of one can be united with a part of another (cf. Figure 1 for a diagram of the stimulus and prototype components and their configurations). This analysis has to occur before there can be an innovation (nothing exists in isolation from everything else, and nothing comes into being from nothing). The analysis and recombination are cognitive functions although the resulting innovation can be either a material item or a non-material item such as language.

In Barnett's theory, culture change is the result of the operation of two separate series of cognitive processes. The first series governs the development of the innovation itself by some one person (often unknown), while the second governs the acceptance of the innovation by others in the society. The theory holds that all innovation, in response to some cultural pressure (a need or want felt by the innovator) stems from antecedent configurations which are developed out of the past and present experiences of the innovator. The present experience (stimulus configuration) calls forth the prototype configuration through the cognitive processes of substitution, equation, and discrimination in the creation of something new. According to Barnett's theory all culture change, which, therefore, includes all linguistic change, is the result of innovation. Change by analogy is also the result of innovation, each change undergoing exactly the same cognitive processes as did the original change that triggered the subsequent analogous change. Analogous change is primary change. This designation is contrary to its characterization in linguistic literature as minor, tag-along change.

The innovator, in response to a perceived 'want or need', comes up with a stimulus configuration (XR_2Y on Figure 1) developed out of his present experience. This stimulus brings to mind a prototype configuration (AR_1B) for a possible solution to the perceived need or want. According to Barnett, each personal experience is remembered and registered, and all future experience is processed through the remembered experiences either consciously or unconsciously. As a result any past experience can become a prototype for an innovation in the following manner:

- a) X (present stimulus) recalls A (previous experience) by reason of the commonality or similarity (C on Figure 1) deemed present;
- b) A's recall evokes the correlate B and R_1 (the relationship existing between A and B);
- c) This gives X the same meaning to B that A has to B;
- d) XR_1B is created; it is new to the extent X differs from A (Barnett 1983, 70).



C_2 : Common element(s) between Y & B
 C : Common element(s) between X & A
 R : Relationship, identical, between X & C, and A & C; and between Y & C_2 and B & C_2
 AB : Elements in Prototype Configuration
 XY : Elements in Stimulus Configuration
 R_1 : Relationship linking elements A & B
 R_2 : Relationship linking elements X & Y; R_2 may be the same as R_1 or completely different
 Prototype Configuration: AR_1B
 Stimulus Configuration: XR_2Y

Innovation Possibilities (the basic re-combinations of Stimulus and Prototype Configurations):

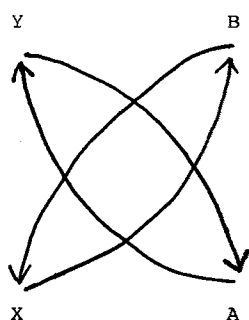
XR_1B : X replaces A in context of B and R_1
 AR_2Y : Y replaces B in context of A and R_2
 AR_1Y : Y replaces B in context of A and R_1
 XR_2B : X replaces A in context of B and R_2
 XR_1Y : X replaces A and Y replaces B in context of R_1
 AR_2B : R_2 replaces R_1 in context AB

These innovation possibilities are amalgamations of past and present experiences (Barnett 1983, 71).

Figure 1: Diagram of Stimulus and Prototype Configurations Including Key to Configuration Symbols

Cell 41, diagramed in Figure 2, illustrates the way in which experience is processed and the possible innovation recombinations. The arrows going to the left $\curvearrowleft$, $\checkmark$ illustrate projection possibilities with the arrow curving downward to the left $\checkmark$ indicating that "B can replace Y in the context of X" ($XY \succ XB$), while the one curving upward to the left $\curvearrowleft$ means that "A can substitute for X in the context of Y" ($XY \succ AY$). The arrows going to the right $\curvearrowright$, $\checkmark$ indicate the possibilities for assimilation with that arrow curving downward to the right $\checkmark$ meaning that "Y can replace B in the context of A" ($AB \succ AY$), and the one curving upward to the right $\curvearrowright$ signals that "X can replace A in the context of B" ($AB \succ XB$). Relations (R_1 , R_2) are inextricably joined to the components to which they are symbolically attached (X_2 , Y_2 , A_1 , B_1). Each relation determines the organization and the position of its correlates. "In grammatical terms a designated component is the subject of a statement affirming its relationship to a correlate; but it is the meaning of the relati-

onship that is significant, not the manner in which it is expressed". That is, the relationship A_1B_1 may be reciprocal (A likes B and B likes A) or non-symmetric (A is the father of B which implies B is a child of A). However, A_1B_2 states that the "relations between the components (X, A) and their correlates (Y, B) are inherently different" (A admires B, while B ignores A). "Relationships having the same number have the same meaning; the remainder when they are present are inherently different", i.e., X_2, Y_2, B_2 , and A_1 could well indicate that "X employs Y, that Y is employed by X, that B is employed by A, but that A is younger than B". (The above quotes are all from Barnett 1983, 86-89.)



Innovation Development:

Projection Possibilities:

- 1) Arrow curving downward to left:
B can replace Y in context of X ($XY > XB$).
- 2) Arrow curving upward to left:
A can substitute for X in context of Y ($XY > AY$).

Assimilation Possibilities:

- 1) Arrow curving downward to right:
Y can replace B in context of A ($AB > AY$).
- 2) Arrow curving upward to right:
X can replace A in context of B ($AB > XB$).

$$Y_2 = B_1$$

$$X_2 = A_1$$

Subscripts 1, 2 = R_1, R_2

The relations are intrinsic to the components to which they are attached symbolically.

Figure 2: Barnett's Cell 41:

A Diagram of the Cognitive Processes of Innovation

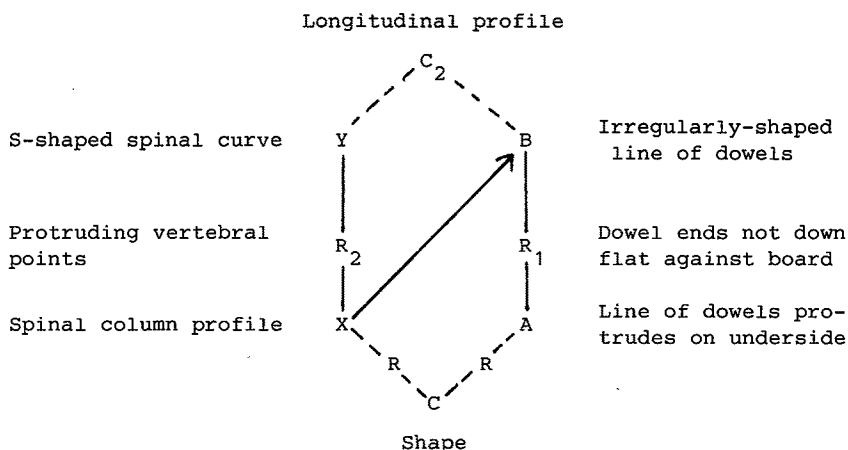
Barnett defines the organization and position of the components and their correlates diagramed in Cell 41 as follows:

X precedes Y, and Y follows X;
A is older than B, and B is younger than A.
Therefore, A precedes Y, and B follows X,
While X is older than B, and Y is younger than A
(Barnett 1983, 88).

All of this means that Cell 41 represents a situation for innovation in which one to four recombination "possibilities could be activated at any one time" (1983, 88-89).

The innovation discussed below and diagramed in Figure 3 illustrates how the innovation process worked in the development of a measurement device to record spinal curvature. This device was necessary so that a second innovation, a lumbar pad for a fighter aircraft, could be built. The prototype for this measurement

device was a child's wooden toy (L. Collins 1977, 282-290). This toy had pieces of colored doweling inserted through holes in its base permitting the child to pound the dowels down even with the base, turn the toy over and then pound them back through again. Often the dowels would not be pounded flat so that an irregularly shaped line of dowels would occur on the underside of the toy.



Innovation: XR_2B . A board with holes one inch apart placed down its length through which to push a dowel against each vertebral longitudinal process to reproduce the spinal curvature.

Figure 3: Development of Spinal Curvature Measurement Device

Each innovation comes about because of the innovator's recombination of the prototype components with those of the stimulus configuration through the cognitive processes of either equation and substitution or discrimination and substitution by means of assimilation or projection of a common, linking antecedent, depending upon the innovator's recall of past experience. Prototypes called forth by two separate individuals need not have the same elements even though they stem from the same past experience; their perceptions of the same experience may well differ. All innovations and prototypes have a basal common element (C and/or C_2) which is perceived by the innovator and which links the stimulus configuration with the prototype configuration, permitting the recombination to take place. C and C_2 in the recombination process can be incorporated components.² Whether $Y = B$ or $Y-B$ (does not equal) depends upon whether C_2 dominates or is denied with reference to a specific Y . C_2 and C are perceptual variables which can differ from individual to individual.

In order for an innovation to be accepted within a culture, society, or group, the members of it have to admit there is an equation between a custom and the innovation so that (1) the innovation can be substituted in the context of the old custom, (2) the correlate of the innovation is identified with something

familiar, and the innovation becomes an appropriate substitute for the former, or (3) a double substitution occurs with both the innovation and its correlate replacing the familiar custom and its correlate, the innovation the stimulus for the acceptor. If one of these doesn't occur, either because the services of an advocate are inadequate or because they don't spontaneously come to the minds of the public, the introduced idea comes to naught. Such is the case in a linguistic innovation. The child during the period of language acquisition created a single past tense verb form in which there was both internal vowel change and the addition of the past tense suffix -d, -t, or -schwa d:

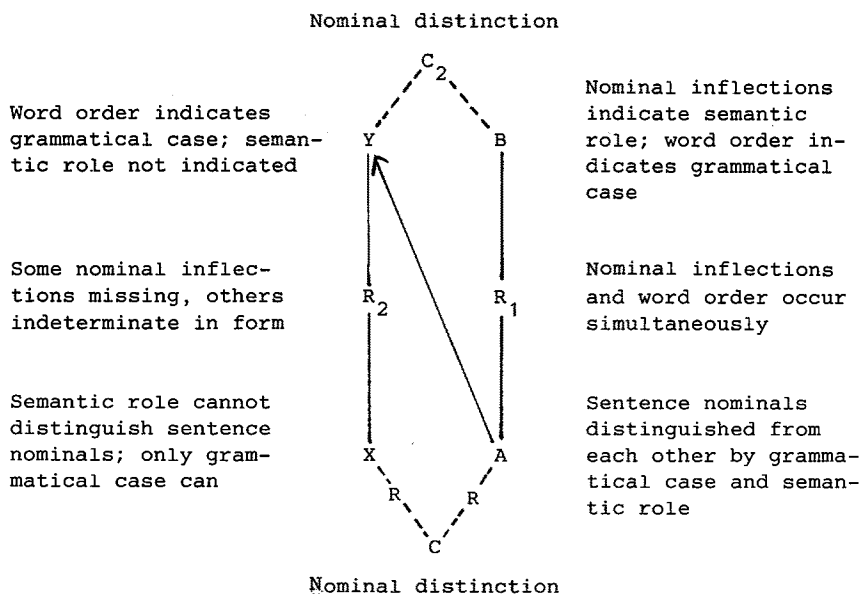
- 1) I dagged and I dagged a great big hole.

Actually, this is a good innovation, and its acceptance would have greatly simplified past tense formation in English, eliminating the forced discrimination of strong and weak verbs and the decision of whether to add a suffix or to change the root vowel. In this instance the child's innovation won no advocate, and a marvelous opportunity to make English past tense formation tidier was lost. The cognitive processes for acceptance are the same ones used by the innovator in the creation of something new; however, instead of these processes creating an innovation from the rearrangement of old parts of elements, they permit the fitting in of the innovation into the culture through the occurrence of stimulus and prototype configurations described above in the minds of the citizenry (cf. Barnett 1983, 166 ff.). It is the acceptance of an innovation by the public that brings about culture change, not just the occurrence of the innovation.

Barnett's Theory and Language Change: Four assumptions underlie the applicability of this theory of culture change to language change: (1) Language is an item of culture, and as such, changes just as do other non-material and material features of culture. (2) All languages, regardless of individual structure, organization, and lexical item differences, are the creation of man. (3) The cognitive processes of all men are the same--to argue otherwise would be to postulate the multiple and separate origins of men, a non-viable stance to assume this date in the light of current research in mitochondria DNA that suggests that all men on earth today are related as were all their ancestors. Therefore, their cognitive processes have to be the same. Their world views may differ insofar as their cultures, backgrounds, and environments do, but the same cognitive processes pertain.

The Definition of Language Change in Old English According to Barnett's Theory: The following seven innovations found in Old English are used to demonstrate the applicability of Barnett's Theory to language change, its applicability to culture change already having been established by him. These particular innovations were selected for analysis and discussion because of their diversity of type.

The first innovation (Figure 4) is where only grammatical case distinguishes sentence nominals in Old English.



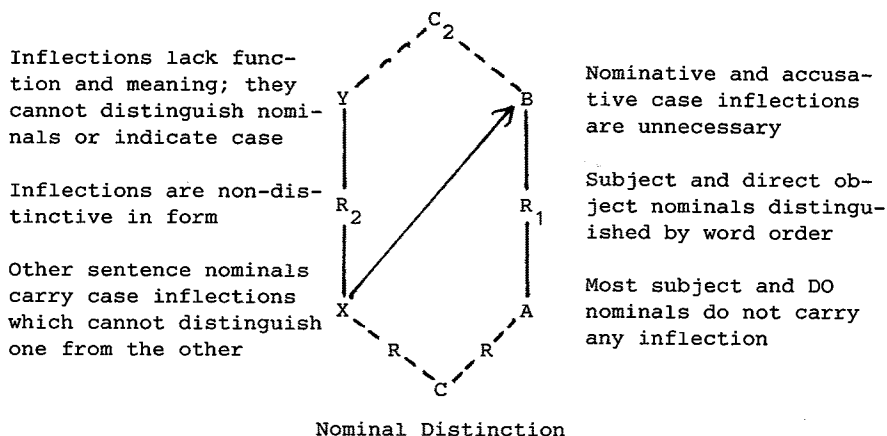
Innovation: AR_2Y

Figure 4: Grammatical Case vs. Semantic Role

In this innovation the sentence nominals are distinguished from each other by grammatical case only, indicated by the word order of the nominals in the sentence. Part of X is discriminated from part of A and dropped. The remainder of X repeats the remainder of A. This A has Y as its correlate through relation R_2 , forming the innovation AR_2Y . Although some of the remaining inflections are distinct in form, as in example 5 below, they no longer indicate semantic role but now simply repeat the word order/grammatical case information of 'subject'.

- 2) ond hie [nom/acc sg/pl; subject] him [dat/acc sg/pl; IO] friþ [nom/acc sg; DO] wiþ namon Anglo-Saxon Chronicles 866 [and they took peace with it (the army)]
- 3) ne maeg werig mod [nom/acc sg/pl; subject] wyrde [acc/dat sg, nom/acc pl; DO] wiþstondan Wanderer 15 [the weary mind cannot withstand fate]
- 4) þa Tostig [nom/acc sg; subject] þaet [nom/acc sg; DO] geaxode Anglo-Saxon Chronicles 1066 [when Tostig discovered that]
- 5) to þam se gumena baldor [nom; subject] ealle þa yldestan þegnas [nom/acc pl; DO] Judith 9 [the ruler of men commanded all the oldest thanes to that]

In the second innovation, illustrated in Figure 5, inflectional case alternation of the object nominal and the prepositional object comes about because the inflections are meaningless and sentence nominals are distinguished only by grammatical case via



Innovation: XR_1B

Figure 6: Dropping of Nominal Inflections

This innovation is pertinent to the concept of drift. Beginning in Old English a reduction in the number of nominal, adjectival, and verbal inflections can be traced down to Modern English where there are almost none left. This reduction has been labelled drift, trend, or tendency in scholarly literature. It is treated in this literature as if it is inevitable and as if the language itself demands the change and sees to it that the demand is carried out--in one sense a self-fulfilling prophecy. I would not argue against the fact of inflection reduction in English through time; it is very evident. However, I would argue against the concept of drift found in the literature in which a language can demand and then fulfill what is demanded. Drift, when presented this way is motivationless change. Analysis of the evidence found in Old and Middle English shows that the reduction of inflections did not occur just to reduce the number of inflections in response to a demand by the language to do so. The reduction in the number of inflections occurred because they conveyed no semantic information to the users; they had become redundant. English speakers made three attempts to cope with this redundancy. First, the distinction of nominals by semantic role and indicated by inflection was dropped. Grammatical case distinction (Subject, IO, DO) via word order replaced semantic role distinction (the innovation diagrammed in Figure 4). However, this innovation did not change the status of the inflections: they were still meaningless, the remnants of an archaic system that no longer functioned. As a result a second innovation occurred in which case alternation was permitted. Because the inflections were meaningless, it did not matter which inflection was used (the innovation outlined in Figure 5). This innovation also did not change the meaningless status. A third attempt was made in Middle English to cope with the meaningless inflections. This innovation resulted in the dropping of the inflections serially (cf. Figure 6).

Not all the nominal inflections were dropped simultaneously because of this one innovation. Additional changes by analogy occurred so that eventually all inflections were dropped from the nominals except the plural and possessive markers (cf. the discussion for the innovation illustrated in Figure 9 below for a complete explanation of change by analogy). It is the subsequent analogous changes that give rise to the idea of language drift as presented in the literature. However, according to Barnett's theory each subsequent analogous change is an innovation. It was the series of analogous innovations which ultimately resulted in almost total elimination of nominal inflections in English.

The next innovation is interesting because it involves change in form, function, and meaning.

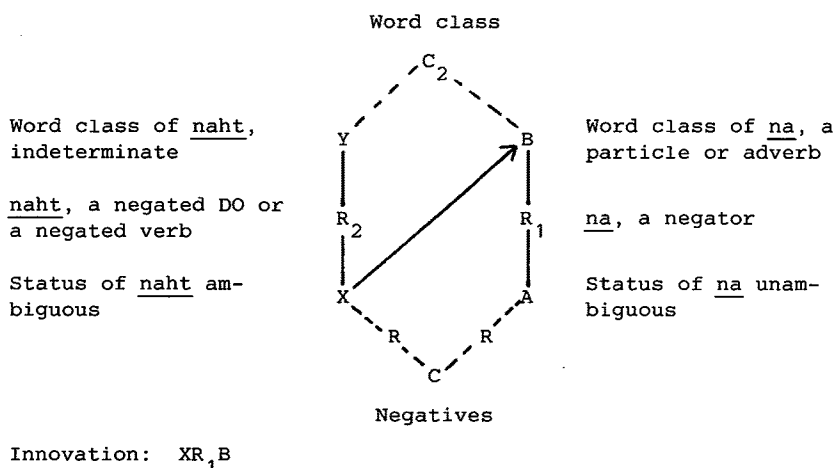


Figure 7: Word Class Change

Here X, the negative naht/noht from na awiht (negator + pronoun) or from na agan (negator + verb) is equated with A, the negative na/no/ne, in the relationship R_1 with A's correlate B. The ambiguous status of naht is clearly illustrated in examples 10-13 below and the resultant lack of ambiguity after the innovation occurs is illustrated in examples 19-23.

Stimulus sentences:

- 10) ne con ic noht [DO singan [infinitive]]...for þon ic naht [DO] singan [infinitive] ne cuþe AEIlfred's tr. of Bede, Historia Ecclesiastica Gentis Anglorum (Cassidy and Ringler) 127, 23-4
[I cannot sing naught..because I do not know naught to sing]
- 11) mon ongiet mid hwilcum staepum þaet nawht waes þurhtogen AEIlfred's tr. of Gregory's Pastoral Care (Sweet) 241, 18
[one perceives with which steps that (?subject) not (?adverb) was brought about] or
[one perceives with which steps that (subordinate conjunction) naught (?subject) was brought about]

- 12) ac hit noht ne beheold þe ma þe hit oftor aer dyde Anglo-Saxon Chronicles 1006E
 [but it (the army) not [?double negative marker naht ne] prevailed...] or
 [but it (the army) naught [?DO] not [?negative particle ne] prevailed...]
- 13) þa forsoc he & saede þaet he hit nahte [negative + Aux V] to donne [main verb] Anglo-Saxon Chronicles 1070A
 [then he refused and said that he was not bound to do it]

Prototype sentences:

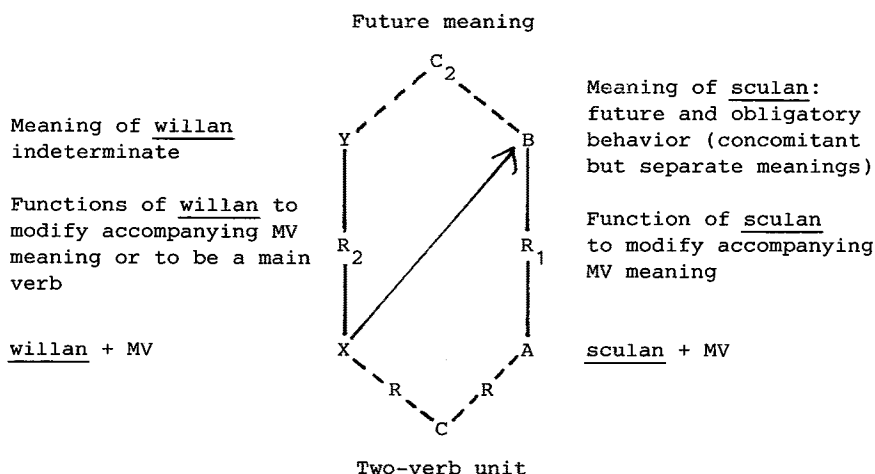
- 14) fela godra hama þe we genemnan na cunnan [negator + Aux V] Anglo-Saxon Chronicles 1001E
 [many good homes which we are not able to name]
- 15) þaet is se eþel þe no geendad weorþeþ [negator + MV/PP + Aux V] Christ II 1640
 [that is the home which does not become ended]
- 16) mid langum scipum na manegum [negator + adjective] Anglo-Saxon Chronicles (Earle) 3,7
 [with long ships, not many]
- 17) na elles [negator + adverb] Ælfric, Grammar
 [not else]
- 18) swa þet nan man na haue [negator + MV] þaer... Anglo-Saxon Chronicles 656E
 [so that no man does not have there...]

Innovation sentences:

- 19) maeni fealdlice steorran of heofenan feollan noht be anan oppe twam Anglo-Saxon Chronicles 1045E
 [manifold stars fell from heaven, not by one or two]
- 20) þa nolde se papa naht þaet don for hie ne brohton non gewrit Anglo-Saxon Chronicles 995F
 [then not would the Pope not that do for they not brought no writ]
- 21) þaet nan mann ne mihte þencan embe naht elles buton... Anglo-Saxon Chronicles 995E
 [that no man not might think about not else but...]
- 22) noht longe ofer þis Guplac 1144
 [not long over/after this]
- 23) aefter noht monegum dagum... Ælfric, Metrical Lives of Saints (Skeat) 23b, 35
 [after not many days]

In innovation 5, presented below in Figure 8, the periphrastic future with willan is created. This innovation is interesting because correlate B consists of two parts (meanings). When this occurs, the innovator can select out any one of the parts, or he can use them all. In this particular innovation, he selected out the future meaning only. It is also of interest to note that often in innovation the most commonly used pattern will not become a prototype because the present experience does not recall it as a possible solution to the problem; its parts cannot be manipulated by the innovator and joined to those of the stimulus in order to create something new. Such is the case in #24

where the future is indicated only by the context--the tense used in the sentence is the present (this being the ordinary way to signal the future in Old English).



Innovation: XR_1B

Figure 8: Periphrastic Future with willan

- 24) ic arise ond ic fare to minum faeder, ond ic secge him...
Luke 15, 11-32 (West Saxon Gospels)
 [I arise and I go to my father, and I say to him (literal translation; context indicates futurity)]
 [I will arise and I will go to my father, and I will say to him (translation with future stated)]

As is clearly shown in the following examples, sentences of the stimulus, prototype, and innovation situations can and do exist at the same time along with the archaic situation seen in (24).

Stimulus Examples:

- 25) gyf hwa wyle [MV] nu swa lybban [MV₂] aefter cristes tocyme
AElfric, Preface to Genesis 18
 [if who desires now so to live after Christ's coming]
- 26) for þon þe drihten wile [MV] þaet ealle men syn hale ond ge-
 sunde ond to þon soþan andgite gecyrrian [MV]
Blickling Homily X (Cassidy & Ringler) 6
 [because God desires that all men be well and sound and
 (that they) turn to true knowledge]
- 27) þaet he...hycge [MV] swa he wille [MV] Wanderer 14
 [that he think as he desires]

Prototype Sentences:

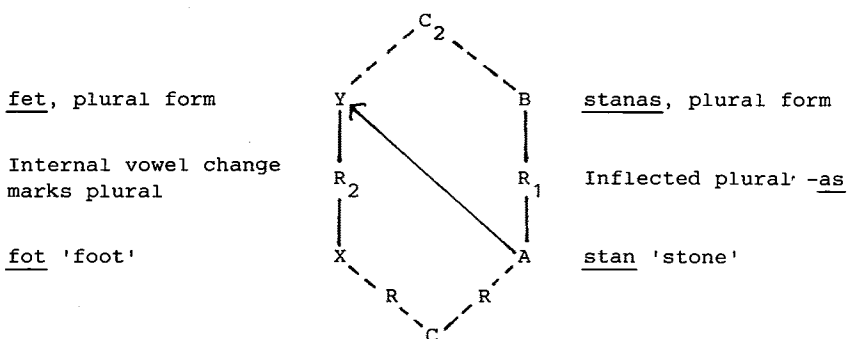
- 28) þu scealt [future + obligation] Isaac me onsecgan
Genesis A 2852
 [you are obliged to/must sacrifice Isaac to me]
- 29) þaer þu scealt [future] ad gegaerwan [MV] Genesis A 2856
 [there you shall prepare a pyre]

Innovation sentences:

- 30) gyf þu þonne wile [future] mildheortnesse mid us don [MV]
 saga us þaet hraetlice... Prose St. Andrew (Cassidy and
 Ringler) 69
 [if you then will do mercy with us, tell us that quickly]
- 31) hwider hreþra gehygd hweorfan [MV] wille [future] Wanderer
 72
 [whither the heart's intention will turn]
- 32) hwonne se aelmihtiga god wille [future] þisse world ende ge-
wyrcean [MV] Blickling Homily X (Cassidy and Ringler) 65
 [when the Almighty God will bring about this world's end]
- 33) to hwon hine dryhten gedon [MV] wille [future] Seafarer 47
 [(as) to what God will bring him]
- 34) þe wile [future] gasta weard lissum gyldan [MV] Genesis A
 2920
 [the Guardian of Hosts will reward thee joyfully]

The next innovation to be discussed is that of change by analogy. Analogous forms are produced by double substitution. Not only is X equated with A, Y is equated with B. When Y replaces B, it must be connected to X in the same relationship that originally joined A and B. This constitutes an innovation because Y has never before been related to X as it is here as a result of the double substitution, and because neither X and A nor Y and B are identical; they are only alike in some respect. The innovation is XR_1Y , and the form AB is preserved. X has to be considered able to be pluralized the same as Y has to be considered to have the same inflection as B. The noun classes are considered equivalent, allowing the plural inflection -as to be substituted for internal vowel change pluralization. The same applies to the analogous change of teþ to topas cf. Barnett 1983, 151-157).

Plural inflection



These nouns can be pluralized

Innovation: XR_1Y

Figure 9: Analogous Change via Double Substitution

Stimulus sentences:

- 35) ond þa teþ þurhsmyhp...Soul and Body I, Vercelli Ms. 119
[and (he, the worm) crept slowly through the teeth]

Innovation sentences:

- 36) ond þa topas þurhsmyhp...Soul and Body II, Exeter Ms. 114
[and (he, the worm) crept slowly through the teeth]
37) sindon þa scancan scyllum biweaxen, fealwe fotas Phoenix 310
[are the shanks (of the Phoenix) overgrown with scales,
yellow (are) the feet]

In #35 the original internal vowel change pluralization occurs in the version of Soul and Body found in the Vercelli Ms., while in the version found in the Exeter Ms. (#36) the innovation occurs.

The last innovation diagrams how kennings can come about. A kenning is a compound word which is always figurative, a 'poetic and characterizing periphrasis' (cf. Cassidy and Ringler 267-69). The base word of the compound identifies the referent as something it is not except in relation to the concept expressed in the limiting word. In the innovation of the kenning diagrammed in Figure 10, this kenning is described by Cassidy and Ringler as a "metaphor in which the limiting word (sea) supplies the context in which the tenor (ship) and the vehicle (horse) achieve their union" (268). Here ship (the referent) is called a horse (base word) of the sea (limiting word) because the ship carries men over the sea as a horse carries them over land. Therefore, a ship is a horse, but a horse of the sea.

Compound word for transportation

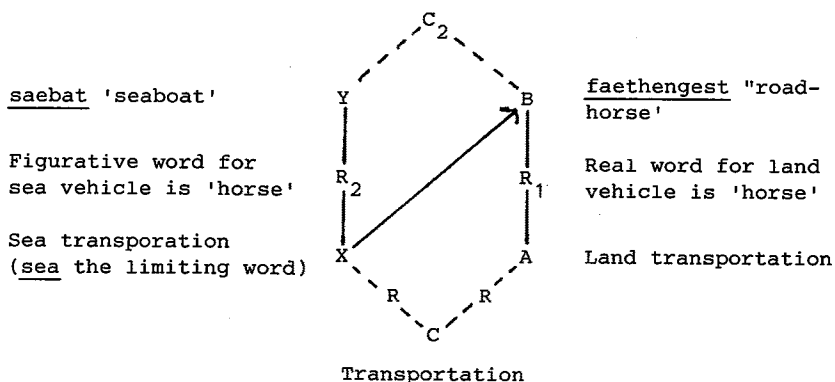


Figure 10: Innovation of a Kenning

This innovation involves double substitution also. X is equated with A and substituted for it, the innovator ignoring the difference between 'land' and 'sea'. The limiting word sae in Y is equated with the word faet in B and is substituted for it, making the compound saehengest. These same processes would be used in making other kennings such as those given below:

- 38) feorophengestas [current or ocean horse] ymb geofenes staeþ
 sæld saemearas [seahorses], sunde getenge Elene 226
 [the current horses (ships) stood ready along the ocean's
 shoreline, seahorses (ships) tethered next to the waters]
- 39) merehengest [seahorse]; sae wudu [seawood]; lagumearh [water
 horse]; ypmearh [a wave horse]; weg flota [a way floater];
 hringedstefna [the ringed-neck]: each of these is a ken-
 ning for 'ship'
- 40) ganotes baep [gannet's bath]; hronrad [whale road]; hwaeles
 epel [whale's home]: each a kenning for 'ocean' or 'sea'
- 41) banhus [bone house]: a kenning for 'body'
- 42) roderes candel [heaven's candle]; heofones gim [heaven's
 gem]: two kennings for 'sun'
- 43) hildenaedran [battle adders (arrows sting like an adder's
 bite stings)]: a kenning for 'arrows'

Conclusions: This study has demonstrated that Barnett's theory of innovation and cultural change covers language change and operates in language the same way it does in culture: it is the individual innovator who changes culture and language, not the culture or the language which change themselves. The same cognitive processes are used in the recombination of antecedent (prototype and stimulus) components to get something new in language as in culture. There is a regular pattern of innovation in Old English following Barnett's theory, but I have not so far determined that there is a preference ranking of one kind of innovation pattern over another kind (e.g., XR_Y over XR_B), but there may well be. Analysis of other Old English innovations as well as Middle English and Modern English innovations very well could show there is a real preference of form. Other languages (Indo-European and non-Indo-European) should be analyzed regarding their innovations and possible preference patterns also.

An unexpected finding to this study was the one that revealed that the concept of drift as presented in the literature is inaccurate and is not a factor in either language change or in language change theory. What appears to be language change by drift results from the occurrence of the first innovation and subsequent change by analogy (each analogous change a separate innovation) to bring about regularity of form, such as the -s plural replacing the archaic -en plural, first in Middle English (toes < toon, shoes < schoon) and again in Modern English (oxes < oxen).

This study has purposefully used innovations occurring in Old and Middle English. The analysis has shown that the cognitive processes used then in innovation are no different from those used now; it is possible to reconstruct the elements and the recombination patterns of each configuration necessary for each innovation. Corroborative evidence from German detailing the word class change of nicht, provided by Griffen (1987, 1984), shows the same processes were used with its word class change as were used with naht in Old English.

This research supports the argument that although the innovation inventory differs from time to time and from people to

people, the cognitive processes of man do not. A decided effort was made to select and analyze in detail those innovations that dealt with change in form, function, and meaning in syntax, semantics, morphology, and phonology. This methodology has demonstrated that Barnett's theory identifies those independent and dependent variables common to linguistic change just as it previously identified those common to cultural change, those which Barnett himself demonstrated along with the universality of his theory.

This paper is presented to honor Dr. Homer G. Barnett, Dr. Luther S. Cressman, and Dr. Theodore Stern, my professors at the University of Oregon, Department of Anthropology, whose integrity and ethics were a constant example of proper professional behavior, and from whom I learned so much regarding the scientific method and analysis; Dr. Lloyd R. Collins, my husband, who used this theory to bring about change in modern technology and who made it a household word; and Mrs. Judith Barnett, my friend, who took and still takes an interest in her late husband's students. To them I give my thanks and affection.

Permission to reproduce the stimulus and prototype configuration and Cell 41 as well as the quotations from Qualitative Science was granted by Dr. Philip D. Young, Chairman, Department of Anthropology, University of Oregon, Eugene, Oregon, the Department holding the copyright. My thanks to Dr. Young for this permission and the enlarged copy of 'The Chart'.

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Appendix A

Barnett's definition of pertinent terms is as follows:

Assimilation: It reorganizes experience, occurring when we treat things as the same even though they are not, e.g., using the edge of a piece of paper as a ruler in order to draw a line or a meat-tenderizer tool as a hammer.

Discrimination: This is actually disjunctive identification in which X is admittedly different from A so that it cannot be an acceptable substitute for it, but the relationship of difference makes X and A a configuration that has other potentialities for recombination, e.g., the night/day or right/left contrasts.

Equation: One thing is considered to be the equivalent of another thing. X is considered identical to A and/or Y with B even though this identity may not be real. The Thomas Theorem pertains here. If the equivalence is thought to be real, it is real to the person so thinking. Therefore, he acts as if it were real.

Projection: The innovator projects something from his past experience onto a present experience. These are often called mistakes, but actually they are innovations. Two common examples of projection are finding a man's face in the moon or when a hunter hears a rustling in the bushes and thinks he sees a deer, but he shoots a man because he invents the image.

Redintegration: This is a reinstatement of a complete past experience as a whole without parts. CX is psychologically CA and is so treated--whatever can be done to CA is done to CX. A good example of a whole without parts is a musical chord. Its reality is only as a chord. When a chord is broken down into its component tones, it does not exist.

Substitution: X is a substitute for A in the prototype relationship (R_1) or in the new stimulus relationship (R_2), such as when "ain't" is substituted for "isn't" or "aren't".

AMORCE DE LA NEUTRALISATION DES O À LA FINALE ABSOLUE ET PRODUIT DE LA MONOPHTONGAISON D'(E)AU*

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Université de Montréal

0. Introduction. Comme en fait foi le Dictionnaire de la prononciation française dans son usage réel (Martinet et Walter, 1973), la neutralisation des [o]: [ɔ] en faveur de la voyelle tendue [o] est aujourd'hui quasi complétée à la finale absolue dans la variété de français de l'Ile-de-France.

Dans une étude récente, Morin, Langlois et Varin (à paraître) montrent de manière convaincante que l'analogie - ɔ ouvert de singulier (< [ɔ]) aligné sur l'o fermé du pluriel (< [ō]); ex. [sɔ] > [sɔ] > [so] sot comme sots (< [sɔ] < [sō]) - et non la 'loi de position' préside à ce changement.

Les données des huit dictionnaires examinés par les auteurs¹ sont celles des 19^e et 20^e siècles et n'incluent pas les formes en -au et -eau final qui se prononcent à cette époque avec un o fermé, c'est-à-dire comme les pluriels -aux, -eaux, -ots, -os, etc.

Dans ce bref exposé, je veux montrer trois choses: i) que les finales de singulier -au et -eau comportaient aux 17^e et 18^e siècles un ɔ ouvert bref; ii) que l'allongement et la fermeture concomitante de cet ɔ ouvert se situe vraisemblablement vers 1830 pour le français général; iii) qu'on ne peut expliquer le passage de cet [ɔ] à [ō] qu'en postulant une opposition entre deux o brefs, c'est-à-dire que l'ɔ ouvert bref d'étau, peau, etc. était distinct de l'ɔ ouvert bref d'incognito, capot, etc. Cette hypothèse implique que la monophthongaison d'[\̥ɔ] (< eau), diphtongue longtemps sentie dans les formes en -eau, n'a pas entraîné d'allongement compensatoire de l'ɔ ouvert, absence d'allongement qui explique le maintien de la voyelle ouverte, brève par définition à l'époque qui nous intéresse.

1. Les finales -au et -eau aux 17^e et 18^e siècles. Les témoignages des grammairiens compilés par Thurot (1881-1883) illustrent clairement qu'il faut assimiler les finales -au et -eau à un ɔ ouvert bref. Mes propres recherches sur la phonologie des dictionnaires de l'abbé Féraud (1768; 1787) - qui s'inspire en partie de l'abbé d'Olivet (1736; 1771) - montrent pour leur part que cet ɔ ouvert bref issu de la diphtongue au à la finale absolue est en voie de s'allonger et, conséquemment, de se fermer.

Nous présentons en (1) les informations reprises à Thurot sur les données des 17^e et 18^e siècles, en fournissant les exemples cités (II:613-614):

- (1) a. Oudin 1633: au final bref
 Hindret 1696: au bref; les exemples comportent -au et -eau
 Regnier 1705: au et eau moins longs qu'au + consonne (muette): les exemples comportent une consonne (haut, deffaut, metaux)
 Billecoq 1711: au final bref; allonger un peu -eau; les exemples sont en -eau (beau, chapeau, couteau, taureau)
 Duclos 1754: [ɔ] dans tombeau mais [õ] dans tombeaux
 Douchet 1762: eau en "o clair" le plus souvent; les exemples de ce type ont tous -eau final (contre le "o sombre" (atone) de beauté et (entravé) de Beaune)
- b. Spalt 1626: au se prononce long: sans exemple
 Martin 1632: au se prononce long; sans exemple
 Irson 1662: eau = eõ, yau = yõ; le circonflexe représente vraisemblablement une longue; ex. manteau, tableau, couteau, marteau
 Blegny 1667: au long; ex. boyau, joyau

Des auteurs cités en (1a), seul Hindret exclut nommément certains mots comme comportant une longue (soit eau, tayau, (à) vau (l'eau), beau (+ substantif) et au). Billecoq donne pour sa part au pour bref en précisant une légère différence par rapport à -eau, sans pour autant assimiler -eau et -ots, -aux, -eaux, etc. Bref, les grammairiens s'entendent pour allouer aux anciennes diphtongue et triphthongue -au et -eau une voyelle brève à la finale absolue.

En vertu de la corrélation de timbre et de longueur qui existe à cette époque pour les o, o bref = ɔ ouvert, o long = o fermé. Ainsi, Oudin (1640) donne pour bref et aigu l'o de façot et morceau (48); Harduin (1757) oppose pour sa part le "son clair" de beau, chapeau, oiseau au "son sourd", et toujours long (15), de côte, saule, etc. (16); Boulliette (1788) distingue l'o "aigu" de gruau, chapeau et l'o "grave" de gros, bateaux (143), précisant que les voyelles aiguës sont toujours brèves, les graves toujours longues (10); cf. aussi en (1a) Douchet 1762.

Les données en (1b) sont les seules qui, au 17^e siècle, contredisent la description des terminaisons -au et -eau comme brèves. On notera que Spalt n'est probablement pas Français et Martin, qui dédicace son livre de Strasbourg, utilise peut-être une variété différente de celle du français général; les deux

visent des publics d'élèves allemands. Irson est Bourguignon, Blegny est juré à Paris sans nécessairement en être natif. Ces deux auteurs ne citent toutefois que des formes dans lesquelles au est précédé d'un élément vocalique qui est peut-être responsable de l'allongement. Il est en effet remarquable qu'au 16^e siècle Le Gaynard (1585) donne pour long l'o de joyau, boyau, noyau, tuyau et de la finale -eau², formes où l'o est précédé d'un élément vocalique alors que Bèze (1584) donne au final pour bref et que Lanoue (1596) cite pour brefs pau (ou pieu) et vau (val). Quoi qu'il en soit, il est certain que des dialectes historiques du français ont opposé (et opposent encore) le produit d'au et eau, où la longue de la triphthongue provient vraisemblablement d'un allongement compensatoire à la chute de l'élément prévocanique; on peut penser que certaines variétés de français ont fait de même. Les témoignages en (1a) laissent toutefois croire qu'-eau et -au étaient neutralisés sous la forme d'un o bref, en français général, au plus tard à la fin du 17^e siècle.

Féraud et d'Olivet s'entendent à reconnaître un o long, un o bref et un o douteux. Le témoignage de Féraud, conforme à celui d'Olivet mais plus détaillé, ne laisse aucun doute sur la nature de cet o douteux: il signale le changement en cours de l'o ouvert bref final issu d'au, eau en o fermé long.

Féraud, en 1768 comme en 1787, mentionne sous la vedette 0 l'existence de deux timbres corrélés à la longueur, soit, en tenant compte de la terminologie actuelle de l'aperture des O³, o long fermé et o bref ouvert. Il répète cette information sous OBE allouant à globe et lobe un o fermé et long, ajoutant que tout autre forme en -obe comporte un o bref et ouvert. Le substantif or est aussi dit comporter un o ouvert bref. Il signale sous 0 que "dans l'orthographe, il n'y a pas de caractère pour... distinguer" ces deux sons.

L'o douteux représente une alternance o bref ~ o long régie par l'accent. Féraud (1768; 1787) dit du o douteux qui caractérise la terminaison au (ex. aloyau, joyau):

"Si le mot est dans le cours de la phrase, il est bref; s'il la termine, il est long". (sous AU)

Cette précision n'apparaissant pas chez d'Olivet (1736:69, 1771:77), sa valeur ne peut être mise en doute. Féraud est ainsi parfaitement cohérent avec son affirmation quand il assigne à l'article contracté au, qui se trouve obligatoirement à l'intérieur d'un groupe, la valeur d'un o bref.

Sous EAU, on trouve explicitement mention du timbre "plus ou moins" ouvert du o. L'auteur ne dit rien, ici, de la longueur, mais dans ses deux dictionnaires les formes en -eau comme celles en -au sont typiquement décrites avec un o douteux (ex. chapeau,

fléau, oiseau). Combinant les informations, nous admettrons donc que l'o douteux représente une alternance entre un o ouvert bref inaccentué et un o fermé long sous l'accent.

Comme tous les grammairiens de l'époque, Féraud et d'Olivet attestent la distribution des o brefs et o longs à la finale absolue comme en (2):

- | | |
|------------------------------------|----------------------------------|
| (2) a. <u>-ot</u> : rot, sot, trot | <u>-op</u> : sirop, trop |
| b. <u>-os</u> : dos, héros | <u>-ôt</u> : plutôt, rôti (rôti) |
| <u>-aud</u> : chaud, noiraud | <u>-aut</u> : haut, saut |
| <u>aux</u> : taux, fléaux | <u>-eaux</u> : cerceaux, Meaux |

Les exemples proviennent de Féraud (1768). La distribution des o brefs et o longs résumée en (2) correspond à celle attestée chez les grammairiens de la même époque; ainsi, les terminaisons en (2a) -ot, -op, -oc et -o affichent-elles un o bref, celles en (2b), soit -os, -ôt, -aud, -aut, -aux et -eaux, comportent un o long.

Les finales -au et -eau sont, par contraste, décrites avec un o douteux; cf. les exemples ci-dessous, repris à Féraud 1768:

- | |
|--|
| (3) a. <u>-au</u> : gruuau, étau, fléau, joyau, landau, préau, tuyau |
| b. <u>-eau</u> : blaireau, bureau, gâteau, hameau, maquereau, seau |

L'alternance o long:o bref dans les formes en -au et -eau final illustre bien la neutralisation en cours.

2. [ʃ] > [ɔ] à la finale absolue: vers 1830. Toutes les variétés de français n'ont bien sûr pas neutralisé l'o ouvert final issu d'-au, -eau et o fermé au même rythme. Ainsi Domergue (1778) donne pour longs joyau et bateau (199) qui comportent assurément un o fermé⁴ mais Morel (1804) dit encore que couteau et écho comportent un o aigu, c'est-à-dire ouvert (89). Par ailleurs, les descriptions d'Olivet et Féraud, réparties entre 1736 et 1787, montrent que le changement est long à s'implanter puisque l'alternance o long:o bref y est encore décrite en 1787 comme régie par l'accent.

Certains auteurs admettent dans des cas similaires la neutralisation (partielle ou totale) des timbres tout en maintenant une opposition de longueur. C'est le cas de Demandre (1769) qui soutient que, contrairement à o qui peut être grave ou aigu comme dans côte: cotte (247), la diphtongue "impropre" au ne connaît pas de variation de timbres (257); ceci ne l'empêche pas néanmoins d'opposer la brève finale d'un joyau et la longue du pluriel correspondant des joyaux (307)⁵. En 1824, Dubroca donne pour douteuses les finales -au, -eau précisant que les monosyllabiques beau et (l')eau sont longs (366). La douteuse ne paraît représenter

qu'une variation de longueur; il dit en effet qu'au est un son "grave dans tous les cas; mais dont la valeur prosodique n'est pas toujours la même" (327); il ajoute qu'il est erroné de croire "que dès qu'un son est grave, il est... long" (328)⁶; il précise dans un autre ouvrage paru la même année (*L'art de lire...*) que la prononciation de d'au et -eau "est très souvent vicieuse pour l'analogie qu'on leur donne avec T'g bref et aigu". (21)

En 1831, la neutralisation est attestée par Faure qui donne en o fermé (l'eau, Pau, peau, sceau (soit comme canaux, dos, Meaux et saut) (59). De même chez Sophie Dupuis (1836) qui, toutes sources historiques confondues, ne connaît que des o fermés à la finale absolue; ex. Pau, peau, Pō, pot: saut, sceau, sot (20)⁷.

Les grammairiens que nous venons de citer permettent d'entrevoir la difficulté de dater avec précision le moment de la neutralisation, en français général, des o ouverts finaux issus d'au avec l'o fermé. En 1778 Domergue atteste que le changement est accompli mais l'opposition se trouve encore chez Morel en 1804. Quant aux témoignages de Demandre (1769) et Dubroca (1824), ils semblent bien attester la neutralisation des timbres, mais non celle de la longueur; dans le cadre de la dite corrélation de timbre et de longueur, on s'attendait à ce que le o bref soit ouvert, le o long fermé.

La documentation sur laquelle je me fonde n'est pas exhaustive mais les travaux que j'ai consultés laissent croire que le changement était accompli vers 1830. Chose certaine, comme je l'ai précisé dans l'introduction, aucun des dictionnaires du 19^e siècle examinés par Morin, Langlois et Varin ne laissait soupçonner l'opposition dont j'ai traité.

3. De deux o brefs en français. Historiquement, on voudrait pouvoir expliquer la différence de comportement entre les finales -au, -eau et celles en (2a) ci-dessus (-ot, -o, etc.). On sait avec certitude que les deux groupes comportaient un o ouvert bref final aux 17^e et 18^e siècles et que cet o ouvert s'est maintenu dans les terminaisons -ot, -o, etc. pendant le 19^e siècle, moment où l'on n'en trouve plus de trace dans les finales -au et -eau.

Deux hypothèses doivent être envisagées. D'une part, on peut tenter d'expliquer que les -au, -eau ferment plus rapidement le timbre de la voyelle par analogie avec les formes en -aud, -aut qui affichent à la finale absolue le même o fermé long que dans les féminins ou les dérivés correspondants; cf. (4) ci-dessous:

- (4) [ō] haut, [ot] haute [sō] saut, [sōt] (il) saute
[fō] chaud, [fōd] chaude [niqō] nigaud, [niqōd] nigau

L'analogie pourrait aussi prendre la forme d'un alignement des formes du singulier -au, -eau sur les pluriels correspondants mais, il faut remarquer que le problème reste ici le même: pourquoi les

formes en -ot, -o, etc., ne finiront-elles par s'aligner sur les pluriels correspondants qu'un siècle plus tard?

D'autre part, on peut proposer d'associer au comportement différent des finales -au, -eau contre -ot, -o, etc. des sources historiques différentes. Cette hypothèse revient donc à postuler l'existence historique d'une opposition entre deux o brefs dont l'un s'est fermé un siècle avant l'autre.

L'hypothèse d'un nivellement analogique est à première vue séduisante. À cet égard, on notera que Boindin (1753) oppose la brève d'Escaut (qu'il écrit Escaud) (fleuve) et beau à la longue de chaud (13); de même Harduin (1757) cite Escaut (fleuve) avec les formes en "o clair" comme beau, chapeau (16). Or, Escaut n'a qu'un dérivé: Escautin (l'un de ses affluents), et ne connaît aucun correspondant féminin ou pluriel. Il serait dès lors tentant d'expliquer la brève d'Escaut par l'absence d'un vis-à-vis quelconque à voyelle longue.

Cette hypothèse explique cependant mal plusieurs faits. D'une part, les formes en -au et -eau n'ont pas de féminin correspondant à consonne finale, consonne dont la présence historique pourrait expliquer l'occurrence d'un o long. D'autre part, il est exclu de baser l'analogie sur l'existence de dérivés en o fermé: si beau: beauté, peau: dépeaucer sont bien attestés, on ne connaît aucun dérivé à fiéau, gruau, landau ou corbeau, escabeau, lambeau. Quant aux dérivés du type noyauter (noyau) (20^e siècle), tuyauter (tuyau) (1822), ils sont bien plus tardifs. Ajoutons que nombre de dérivés des formes en -au, -eau se présentent tout à fait différemment; ex. morceau: morcealer, veau: vêler.

En ce qui regarde le nivellement sur la base d'un pluriel correspondant, un terme de masse comme chaudeau (Féraud 1768), qui désigne du lait chaud sucré et aromatisé qu'on verse sur autre chose, se prête mal à des emplois pluriels. Qui plus est, comment expliquerait-on que l'analogie singulier aligné sur le pluriel ne touche pas encore les finales -ot, -o, etc. Il va sans dire que j'exclus l'influence de l'orthographe: l'alphabétisme des populations francophones aux 17^e et 18^e siècles est par trop connu pour proposer ce type d'explication.

Vu les arguments présentés, il ne reste plus qu'à proposer une explication phonologique pour la fermeture des finales -au, -eau, à savoir qu'elles comportaient un o bref distinct du o bref des finales -ot, -o, etc.

Historiquement, cette différenciation est ancienne. Il ne suffit en effet pas de supposer la création de cette opposition au moment de la chute du t final des formes en -ot par exemple. La chute du t final dans ce cas est en effet plus tardive que celle de la consonne dans accroc par exemple. Il faut aussi compter avec les formes en -o final: un mot comme écho n'a jamais fait en-

tendre de consonne finale.

Bref, il nous faut supposer que l'l'o bref des finales -au et -eau s'est opposé, pendant plusieurs siècles, à l'l'o bref des finales -ot, -o, etc. Cette hypothèse implique donc que le français général a connu une triple opposition pour les voyelles postérieures moyennes soit: /0/1:/0/2:/0/.

Notes

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1. Ces dictionnaires sont tous informatisés. Les données auxquelles se reportent les auteurs sont donc des plus fiables tant qualitativement que quantitativement.

2. Il cite aussi estau dans ses exemples mais cette forme a subi l'influence d'étaux (pluriel d'étal) et la longue n'est donc pas d'origine: cf. étau: pluriel d'étoc, estoc. Hindret donne pour bref le même mot.

3. Au 18e siècle et dans la première moitié du 19e, les grammairiens appellent régulièrement ouvert l'o que nous disons fermé et fermé celui que nous disons ouvert: cf. Millet, 1933:30, 41-42, 46-47.

4. Notons que Demandre refuse d'assimiler le son d'au et celui de l'o grave de sorte qu'il oppose nommément haute:hôte (257). De la description articulatoire qu'il donne de la voyelle issue d'au contre l'o grave, on doit conclure que la première est sensiblement plus ouverte que la seconde (509).

5. Il alloue curieusement à au, eau un son "sourd et mixte" et à l'o de rose un son "pur" (54-55).

6. Dans L'art de lire..., Dubroca ne reconnaît pourtant au son "o" que "deux modifications" soit l'o aigu et l'o grave et long (18).

7. De toute évidence, la variété de français décrite par Dupuis est des plus novatrices puisque même les formes en -o (ex. écho, numéro) comportent un o fermé (66).

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LATERAL DRIFT
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The comparative study of languages brings to our attention two facets of phonetic change which, if not contradictory, are at best incongruous. One is the observation that a particular phonetic change is at some point in time completed, i.e., it no longer operates (Householder 1972). The other is drift, the temporally disparate recurrence of the same type of change in the same language or set of languages (Sapir 1949:182-87). Some examples of drift reflect the kind of change we expect to occur, such as the palatalization of velars before a high vowel, $k > \check{c}$ being found in Old Egyptian, Sanskrit, Serbo-Croatian, Italian (from Latin), etc. Similarly, one may anticipate the spirantization of stops in postvocalic position, such as the change of [b] to [β], [v] or [w] (Hebrew, Spanish, Greek). Prehistorically, we find a *w in proto-Indo-European (pIE) which has developed from proto-Lislah (pLL) **b (Hodge 1981, 1983). Not only the pIE but other data point to such a prehistoric, dialectically limited, change. In Akkadian *kabābu* 'burn' and *kawū* 'burn' we have both the b and its spirantization, suggesting a prehistoric shift in some dialect of LL.

Another familiar and no less widely distributed change is that of a lateral (l or r [cover symbol $\mathfrak{r}$]) to y, as in Lat. *clara*, It. *chiara* (Rohlf's 1949:298-301). Regarded as a shift from Latin to Italian this is unremarkable. When we find it in Egyptian to Coptic, in proto-Chadic to Hausa and also attested in pIE, it becomes something we should examine more closely. This paper calls attention to its occurrence in different areas of the LL phylum and at different times. (There is no claim to completeness in the listing of its occurrences.)

We begin with Egyptian. Here some instances of Eg. 3 (a lateral, perhaps having allophones [l] and [ly]), are replaced by y in Coptic (Osing 1976:15-17, 403-48, 458, 460, with consistent confusion of 3 and [?]). Examples are: 3V-. 3-b-w 'Elephantine' (PN), Co. *iēb* /ye:b/. 3-b-[C] 'fingernail', Co. *eieib* /yi:b/. -3C-. **q-3-s-t 'burial', Co. (Sahidic) *kaise* /káyse/. (** indicates reconstruction is ours.) The standard Egyptian is q-r-s-t, which yields Co. (Achimic) *keese* /ké?se/ (cf. Vycichl 1983:73, Osing 1976:424). **q-3-s-t and q-r-s-t were dialect variants; 3 > y, r > ?. -C3-. **b-3-?-t (**?ab3'?'t) 'honey', Co. *ebiō* /?ebyō:/ (cf. Vycichl 1983:38). The older transcription is b-ī-t; for ours see Hodge forthcoming-a. -C3- > y, with loss of C. This development, when preceded by prothetic alif, **?a-C3-, accounts for a number of initial y's in Coptic. In many cases the nature of the C is lost, not being reflected in the hieroglyphs.

?-C-3-d-t (?əC3'd't) 'dew', Co. *eiōte* /yó:te/. The usual transcription is *ǝ-3-d-t*, and Vergote reconstructs **ya3ādat* (1973: 1b:29). This interprets reed-leaf (*ǝ*) as *y*, rather than *ʔ*, and does not recognize 3 as the source of *y*. **?əw3'd'w 'father', Co. *eiōt* /yó:t/. This root is unattested for 'father' in older Egyptian. It occurs in **?-w-3-d (usual *ǝ-d*) 'child', where *w* is reconstructed on the basis of Semitic *w-l-d* 'bear, be born' (Hodge forthcoming-a). -C3- > -3C- > -yC-. *ǝ-b-3-t* 'shrine, sarcophagus', **ǝab3't > **ǝa3b't > Co. *taibe* /táybe/ (Vycichl 1983:212, Osing 1976:423). A common type of metathesis in Egyptian. -3 > -y. *p-3* 'this', Co. *pai* /páy/. *c-ǝ-3* (**?əCǝ'3) 'many', Co. *ašai* /ʔašáy/. *s-k-3* (**?əsk'3) 'plow', Co. *skai* /skáy/ (Osing 1976: 403). Spelling conventions indicate that this 3 > *y* change took place by New Kingdom times (see Vycichl 1983:2.2, sub *taibe*).

In Semitic this shift is not as familiar, though it is certainly attested. E.g., we find an *l* to *y* shift in Ethiopic Semitic: Geez, Tigrigna, Tigre *ǝalib* 'milk', Harari *ǝāy*, Argobba *ǝayy*; Amharic *ayb* 'cheese' (cf. also Amh. *allābbā* 'milk'; Appleyard 1977:68, 62). Amh. *dəngay* 'stone' shows *y* where other languages have *l* or *r*. This word is an Agaw loan, so one presumes that the shift is relatively recent (see Appleyard 1977:78).

In IE the (*k*)*l*- change to (*k*)*y*- from Latin to Italian (see above) belongs with our historical examples.

A second group shows a reconstructed lateral yielding *y* in some language reflexes. A good example of this is found in Chadic. Newman believes that a proto **r* to Hausa *y* in non-initial position was 'a very regular (exceptionless?) sound change' (p.c. 1987). He gives many examples in his historical discussion of Hausa and Dera (1970), e.g., Dera *tile* 'burn', Ha. *tooy*-; Dera *vəl* 'two', Ha. *biyyu*. Schuh reconstructs pWChadic **kārū* 'carry', the Hausa being *kai*, **bārū* 'give', Ha. *bai* (alternate of *baa*) (1977:164, 162). Skinner has examples of *r* to *y* in languages other than Hausa. He reconstructs pCh **kər/l-* 'carry', reflexes including Dera *gərə*, Jilbu *kəy-*, *kəl-*, etc. (1977:15; see also 'liver' [29], 'millet' [31], 'pierce' [34], 'take off' [43], 'thorn' [44], most with *l* to *y*).

For Cushitic Dolgopolsky has -*y*- as the Beja reflex of pCu *-*l*-. Bilin *bir*, Beja *boy* (1973:192, 337). Some isolated **l* to *y* changes are noted by Sasse in East Cushitic (1979:22). Burji *bay-d?*- 'carry' (1982:34) reflects *r* to *y* if it goes back to the familiar ***b-ʔ* base. Although Sasse (1982:167, 165) does not connect the two, Burji *sil-āa* 'war' (taken to be from Ar. *silāh* 'weapon') and *siy-* 'kill', *siy-āa* 'warrior' (taken to be from pEC *-*gǝsi*) may have a common origin and be another example of **r* to *y*. This might cast doubt on the Arabic origin of the former, or it might reflect a change after borrowing.

Our third group of examples show **ʔ* ~ *y* alternations in reconstructions, i.e., the shift was completed in prehistoric times. Such alternations are found in both pCh and pIE.

In Chadic Newman reconstructs **bʔahlə* for 'break' (1977:23). Jungraithmayr and Shimizu have **bʔ-w* and **bʔ-* for North Bauchi, **bʔ-r-k* for Hausa and **bʔ-y* for the Bata group of Central Chadic

(1981:51). This is related to Eg. *b-3* 'hack up', Sem. **θ-b-r* 'break', IE **bhre-u-* 'break up', **bhei-* 'strike' (see below), etc. Newman also reconstructs pCh **dʔəy* 'bird' (1977:22), but the reflexes show both *x* and *y*. Either ***dʔər* must be posited, with *y* a later development, or both ***dʔər* and **dʔəy* assumed for the proto-language.

There are numerous *æ ~ y* alternations to be found among the roots reconstructed for pIE. Some of these are (with abbreviated references): (1) **bher-* 'cut, pierce' (W 7), **bhei-* 'strike' (W 6), **bhre-u-* 'cut, break up' (W 9). It has been thought that the root **bher-* 'pierce' underlies the words for 'bee' et sim., such as Skt. *bambhara* 'large bee', Pol. *barc* 'wild bees' nest'. It is more likely that the meaning 'bee' is primary. In any case, we have **bher-* and **bhei-* alternating for 'bee' in IE. (2) **dhel-* 'breast' (Frisk 1960.1:670-71), **dhre-u-* 'flow' (W 15), **dhē(i)-* 'suck' (W 13). Note also that **euadh-* 'udder' (W 18) has *r/n* (so-called) suffixes. (3) **ghel-dh-* 'desire' (P 434), **ghei-dh-* 'desire' (P 426). (4) **kel-* 'gray, dark' (W 28), **kei-* 'dark' et al. (W 28), **s-kei-* 'shade' (P 957). (5) **ner-* 'under' (W 44), **nei-* 'under' (P 312). (6) **wel-* 'turn, roll' (W 75), **wer-t-* 'turn, bend' (W 76), **wei-* 'turn, twist' (W 74).

Attention has been called elsewhere (Hodge forthcoming-a) to the fact that the sequences *CwV* and *CyV* in Semitic may result in *CVV*. We find doublets in Arabic, such as the Tenth Forms ?*istajwaba* and ?*istajaaba* 'he gave an answer' (root *j-w-b*), ?*istarwaha* 'he smelled (smthg)' (root *r-w-h* 'smell'), ?*istaraaha* 'he found rest' (root *r-w-h* 'rest'). This raises the question as to whether some of the *CVV* (i.e., *CV:*) sequences in IE might not have had a similar origin. For example, we have: (7a) **del-/der-* 'split', **dā-/dāi-/dāi-* 'divide' (W 11, 12, 10; P 175). These could be interpreted as: (7b) ***dex-*, ***dya-/dāy-/dāy-*. Another such set is: (8a) *(*s*)*ner-* 'wind, twist', *(*s*)*nēi-/nēi-* 'spin' (W 62, P 973, 975). We reconstruct: (8b) **(*s*)*nex-*, **(*s*)*nēy-*, **(*s*)*nye-*. (The long vowels of **dāi-* and **[s]nēi-* are here presumed to be of another origin.) (9) **gow-* means 'call' (P 403), **gē(i)-* 'sing' (P 355). The **gē-* form is probably from the same base ***g-w* (from ***g-b*), with ***gwe-* becoming **gē-*.

The alternation of *Cw ~ C* and *Cy ~ C* in IE has been frequently noted (see the many examples in Hirt 1927:291-95, with references). No consistent pattern of *CwV* and *CyV* becoming *CVV* is yet evident, but that such was the case in some instances seems clear, e.g., pIE **twe*, Lat. *tē* 'you', pIE **swe*, Lat. *sē* 'self'. The conditions governing the resulting short vs. long vowels need working out, but we must recognize *w* and *y* as sources of length.

We can expand the set of forms involved by taking consonant ablaut into account: (10) **der-* 'span of hand' (P 203), **dō-* 'give' (W 15); **dher-* 'hold firmly' (W 14), **dhē-* 'set, put' (W 13). Read: ***dyo-* and ***dhye-*, assuming a base ***d-æ* with alternate ***d-y*. This runs counter to the idea that **dhē-* is from **dhex-* (*x* = laryngeal; Sturtevant 1942:55; see Winter 1965 index under Anat. *dāi*, *tehi*). The *-y-* is there as *-i-* in some forms

(Hoenigswald in Winter 1965:98). We may expand (2) above: (2b) **del-* 'drip' (W 11), **s-tel-* 'let flow' (P 1018); **dhre-u-* 'drip' (W 15), **dhēi-* 'suck' (W 13) from ***dhēy-*, **dhē-* 'suck' (W 13) from ***dhye-*; **nei-d-* 'flow' (P 761) from ***N-dey-*, **s-nā-* 'flow' (P 971, W 62) from ***s-N-dya-*. We may connect the plain state **kā-* 'desire' (W 26) from ***kya-* with the aspirated forms **ghel-dh-* and **ghei-dh-* of (3) above, and add **gher-* 'want' (W 22).

The *ɛ* ~ *y* connection also provides clarification among some roots for 'burn'. In earlier work **kēu* 'burn' (W 31) and **kai-* 'heat' (W 26) were thought to be related (Hodge forthcoming-b, q.v.). It is now clear that two different bases are involved. **kēu-* is from ***k-b* ~ ***k-w*. This yields Gk. *kaíō* 'burn, the aorist reflecting the -w- in ancient Greek, *ékausea*, and the -b- in modern Greek, *ékapsa* (forms, Buck 1949:75). Related are pSem. **kbub-* and **kwi-y-*, pCh. **kaw-*. On the other hand, **kai-* is the *y* form corresponding to **ker-* 'heat, fire' (W 30). The *ɛ* form is related to Eg. *t-k-3* 'flame', Sem. *q-l-w* 'roast' (consonant ablaut variant), pCh. **k-l*/**k-r* 'burn'. *y* form relatives include Eg. *s-č-t* 'kindle'.

For further discussion of many of the above root sets in IE see Hodge forthcoming-c.

As prehistoric *ɛ* to *y* shifts are attested in both AAs and IE, it is reasonable to say that some of these must have occurred by 13,000 B.C. Where there is only late attestation, as for Chadic, dating the change (or changes) is presently hazardous. The historic instances vary temporally, as drift shifts should. Approximations are, for some: Old Egyptian to Late Egyptian 2500 - 1600 B.C. (with Coptic about 200 A.D.). Latin to Italian, 200 A.D. - 900 A.D. Geez to Amharic, 500 A.D. to present. The change itself remains a very ordinary one, but the recognition of its various occurrences helps a great deal in the description of the interrelationships of certain root shapes and of the direction of change between these forms.

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**NEW LINGUISTIC AND RUNIC EVIDENCE
WHICH SUPPORTS HALL'S THESIS
THAT THE KENSINGTON RUNESTONE IS GENUINE**

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A. INTRODUCTION

Robert A. Hall, Jr., in his 1982 book, "The Kensington Runestone is Genuine," stirred the author's recent efforts to make a comprehensive survey of the Scandinavian source materials (also see Hall's paper presented before the 8th LACUS Conference and Read's paper presented before the 9th LACUS Conference). My goal has been to reevaluate the major controversies which have been raised concerning the authenticity of the inscription from linguistic and epigraphic viewpoints, using the substantial amount of new information which has been made available in the past twenty years concerning late medieval manuscripts and runic inscriptions. The data uncovered argue strongly in favor of Hall's thesis that the Kensington Runestone is genuine, since appropriate runic letters and word forms are present in the inscription. All arguments raised by other linguistic and runic investigators (i.e., see Moltke and Wahlgren) which have been used to dispute the authenticity of the stone have been removed, and shown to be without foundation.

B. BACKGROUND

My first paper on this subject in 1986, "The Arabic Numbering System on the Kensington Runestone," demonstrated that the inscription contains "unusual forms employed for numbers and dates on the stone and had considerable precedent in the runic record. . .". It showed that one number on the runestone is an Arabic number 10 (ϥ). Arabic placement shown on the Kensington Runestone also exists on a Norwegian bone calendar of the 14th century. See Figure 1 for a description of the inscription.

My second effort, "The Aberrant Runes on the Kensington Runestone," showed that the so-called aberrant runes fit closely with usages around AD 1362 when dotted innovations were common and heavy influence was exerted by Latin letters. The claim that the runes are proof of forgery can no longer be debated, but instead the runes help to prove the opposite.

1. 5 10 15 120 125 130 135
 8 8 8 7. 120 125 130 135
 8 8 8 7. 120 125 130 135
 8 8 8 7. 120 125 130 135
2. 20 25 30 35 140 145 150 155
 20 25 30 35 140 145 150 155
 20 25 30 35 140 145 150 155
3. 40 45 50 155 160 165 170 175 180
 40 45 50 155 160 165 170 175 180
 40 45 50 155 160 165 170 175 180
4. 55 60 65 70 165 170 175 180 185 190 195 200 205
 55 60 65 70 165 170 175 180 185 190 195 200 205
 55 60 65 70 165 170 175 180 185 190 195 200 205
5. 75 80 85 90 185 190 195 200 205 210 215 220
 75 80 85 90 185 190 195 200 205 210 215 220
 75 80 85 90 185 190 195 200 205 210 215 220
6. 95 100 105 110 115 210 215 220 225 230 235 240
 95 100 105 110 115 210 215 220 225 230 235 240
 95 100 105 110 115 210 215 220 225 230 235 240

Figure 1

THE KENSINGTON RUNESTONE INSCRIPTION

From Hall (1982:7-8) with additions marked * by the author

The aberrant runes on the Kensington Runestone have been:

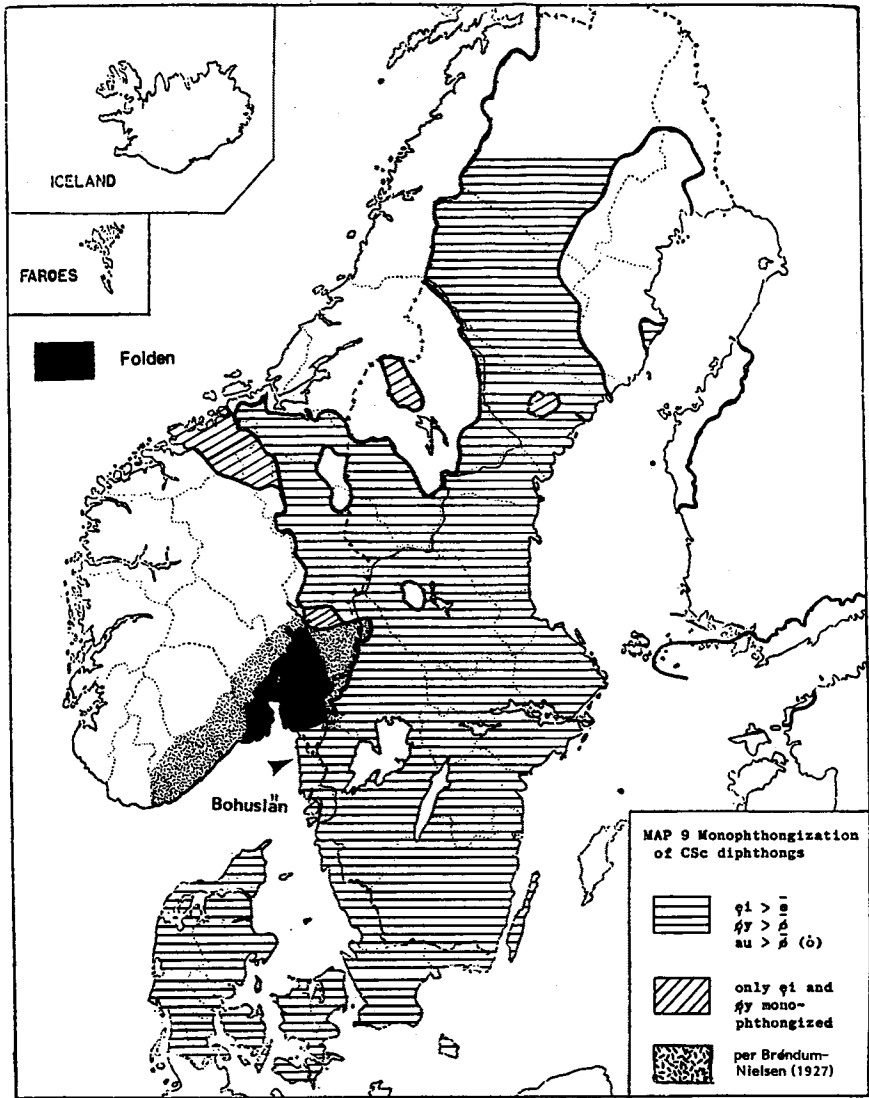
1. The **j-rune** (ᚢ), which used to be sure proof of forgery, was shown to be a crossed **L-rune** (ᚦ) used for the **yl** or **lj** sound in the runic manuscripts *Codex Runicus* and *Lament of the Virgin*. This resulted in the translation **skylar** (shelters) instead of **skjar** (skerries)
2. The **æ-rune** (ᚿ) and **a-rune** (ᚫ), which have their source in Latin script where a crossed-a (ǣ) took the **x-form** already in use during the 13th century. A double-dotted letter **ā** is recorded at the Oslo Chancel already in AD 1427.
3. The **ø-rune** (ᚠ), which was shown to be related to the **ø-rune** (ᚠ) used in Norway and developed to the unique **ø-rune** (ᚠ) in Greenland during the 14th century, and to contemporary manuscript letter forms (Ø, Œ).
4. The **y-rune** (ᚨ), which was shown to be either a cross of the manuscript letters **ŷ** and **ȳ**, or else a crossed double-dotted **ugh/ogh-rune** similar to the unique Tornby (DR169) reversed double-dotted **g-rune** (ᚢ) which appeared for the **w-sound** or **ugh-sound** in the word **dhaugh** (day).
5. The **w-rune** (ᚹ), which is a close cousin of the *Codex Runicus* **w-rune** (ᚹ) and found less than a dozen times elsewhere, or the **g-rune** (ᚢ) used for **w** in **war**. In the 14th century, words like **lag** (law) were pronounced as **law**, hence the use of a **g-rune** for a **w-rune**.
6. The **k-rune** (ᚨ), which was shown to be a form not uncommon in Norway and was already derived from Latin by the year AD 1200.

The third part of my study, which includes a consideration of the linguistic evidence, is as yet unpublished. A summary of this work follows. As will be demonstrated in this paper, the previous linguistic objections to the language on the Kensington Runestone must yield to recent research results regarding the Old Danish, Swedish, and Norwegian languages. Now, remaining questions on the linguistic aspects can be resolved in favor of the authenticity of the Kensington Runestone language.

C. DISCUSSION ON THE DIALECT OF THE KENSINGTON RUNESTONE

Holand (1940) had always maintained that the dialect of the inscription was not Classic Old Swedish, but most likely the dialect of West Gotland. K. M. Nielsen (1950:89) agreed that the dialect could be from the Norwegian border country, and early in the Kensington debate Flom (1910:117-18) had suggested the language was modern Dalecarian from the Swedish province of Dalarna near Bohuslän. S. N. Hagen (1950:341) said:

I shall not attempt to localize the dialect of the inscription. The home of the dialect should perhaps be sought in a locality in which an **e**-dialect is still spoken "... I have assumed all along that the author of the inscription was one of the 8 Góter (Goths), but I would like to know whether it could have been written by a Norwegian. Bohuslän, the narrow coast strip which reaches down to the mouth of the Góta River, was Norwegian until AD 1658. In the southeastern Norwegian dialect spoken here, "ei" became "e, au" and "ey" became "ó", and unaccented "a" became "e" (as in *kasta > kaste*) at an early date. The dialect must have been similar to that of Västergötland just across the border.



Map from Haugen (1976:201)

Figure 2

MONOPHTHONGIZATION OF DIPHTHONGS
ON THE KENSINGTON RUNESTONE

en	=	ein (one)	dedh	=	daudh (dead)
hem	=	heim (home)	redh	=	raudh (red)
sten	=	stein (stone)	øh	=	ey (island)

D. THE CLASSIC OLD SWEDISH VIEW

In spite of Hagen's correct deduction as noted above, Moltke (1951, 1953) ignored these facts and still treated the inscription as the literary Classic Old Swedish, which had a fully declined and complete case structure. Wahlgren (1952, 1958) endorsed Moltke's views, which were also those of Jansson (1949), but incorrectly stated that all investigators agree the language of the inscription is Classic Old Swedish.

Sadly, Wahlgren (1952:68) also ridiculed the work of Hagen (1950) who was then deceased. Hall (1982) has since recognized Hagen's excellent work as "a very solid piece of philological investigation." Today, not a single objection raised by Wahlgren (1952) regarding Hagen (1950) has any merit or validity.

Persisting on a mono-track, Moltke, Jansson, and Wahlgren oddly concluded that the Kensington inscription is a forgery because it is not in complete agreement with Classic Old Swedish. However, the only logical conclusion which one can draw from their investigations is that the language is instead a Scandinavian dialect which remained to be identified. Yet, their investigations were helpful in narrowing the list of "sure proofs" of forgery to seven or eight items, and these will be discussed later.

E. DETERMINATION OF THE HOME OF THE KENSINGTON DIALECT

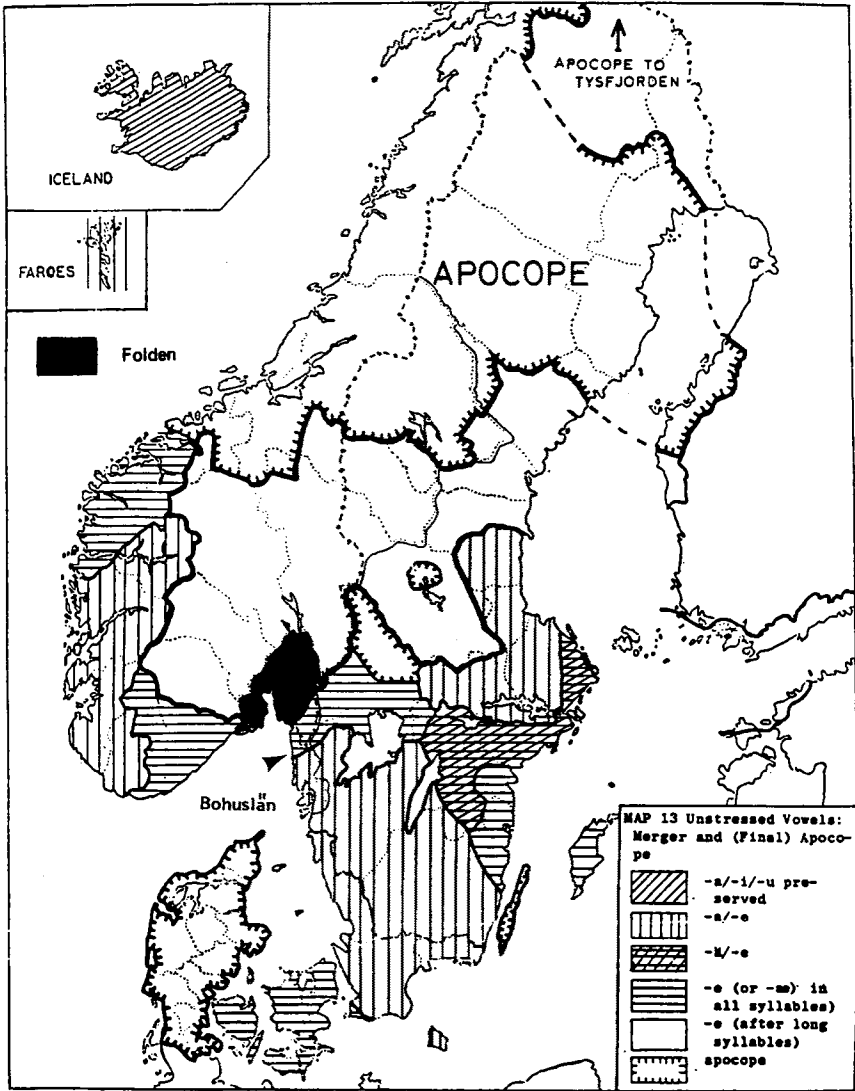
Hall (1982:40), suggests that the dialect is from Västergötland or Bohuslän, due to the contraction of the old diphthongs to single vowels. The map from Haugen (1976) depicted in Figure 2 illustrates how these vowels had contracted in Scandinavia by the year AD 1200.

More importantly, Bohuslän, as was reported by Seip (1959:32), has the additional characteristic that "A large part of the language of Bohuslän in the north is e-language (my translation)," as shown on the map depicted in Figure 3. "Thus, the language uses only e-forms such as *komme*, *skrine*, *snöre*, *tvare*, etc." This is significant since the Kensington Runestone also has the e-dialect form.

Seip adds that in Bohuslän, the voiceless (hard) consonants *p*, *t* and *k* are voiced to *b*, *d* and *g*, such as *gribe*, *mad*, *gród*, *smage*, etc., as also found in one sixth of Norway, as illustrated on the map depicted in Figure 4.

Only Bohuslän and the Danish islands of Fyn and Sjælland have the above three characteristics; namely, monophthongs, e-language and voiced *k*, as shown in Figures 2, 3 and 4.

Since the inscription speaks of only Goths and Norwegians on the journey, only Bohuslän is left as a possibility of the home of the Kensington dialect. Brøndum-Nielsen (1927) gave excellent colored dialect maps which can also be used to confirm this deduction.

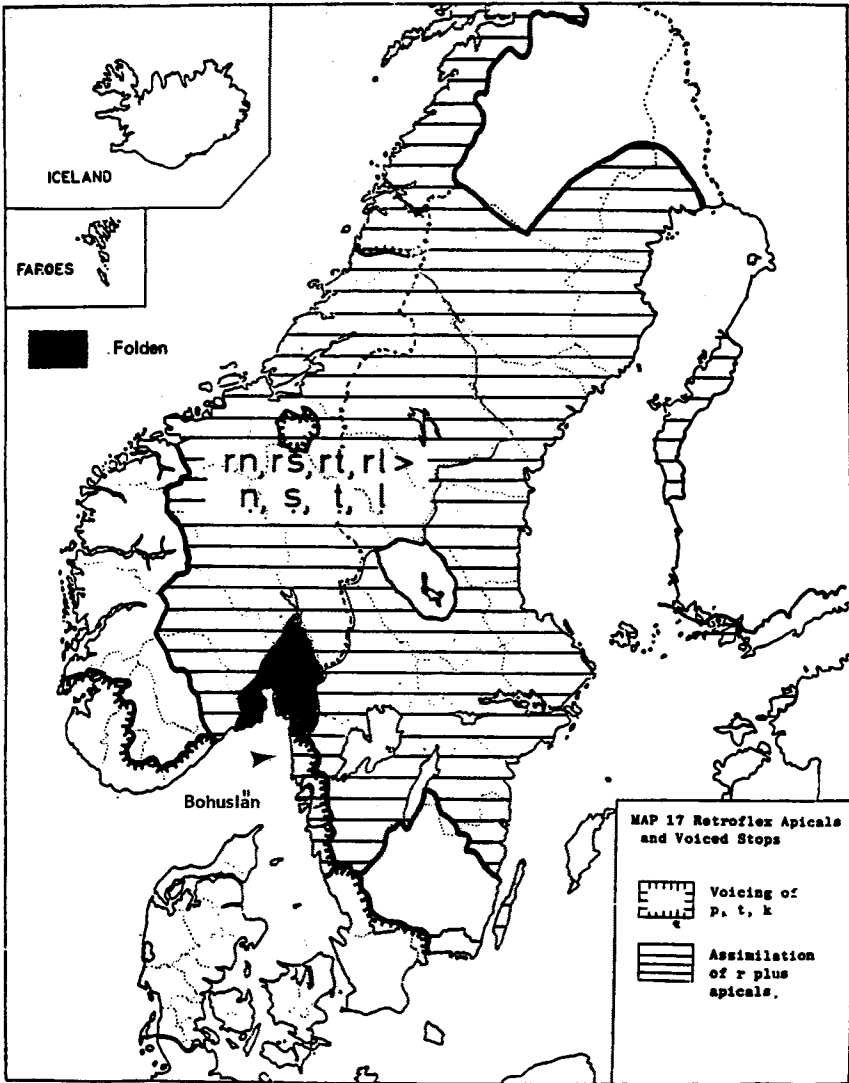


Map from Haugen (1976:264)

Figure 3

UNSTRESSED VOWELS A > E
ON THE KENSINGTON RUNESTONE

góter	=	gótar (goths)	fiske	=	fiska (fish)
fræelse	=	frælsa (save)	optage	=	optaka (acquire)



Map from Haugen (1976:276)

Figure 4

VOICED K > G

ON THE KENSINGTON RUNESTONE

og = ok (and) optage = optaka (acquire)

F. DETAILS ON THE OLD BOHUSLÄNSK INSCRIPTION DIALECT

The following examination of the dialect exhibited on the Kensington inscription reveals an uncanny correspondence to the dialect of Bohuslän:

1. Grøtvedt (1969:280, 1939:16) reports **heim** > **hem** (home), **stein** > **sten** (stone) and **ey** > **ø**. **Dødh** is given by Grøtvedt (1974:56, 1969:281). There are many examples of **en** (one), as per Grøtvedt (1974:55) and one of **røt** (red), per Grøtvedt (1970:23). Such usage is found on the Kensington inscription.
2. Use of the **e-** dialect as in **fiske** (fish), as per Grøtvedt (1939:167), is also found on the Kensington Runestone.
3. Use of voiced **k**, **p** and **t** (**g**, **b** and **d**) as per Grøtvedt (1969:296-7, 1939:16) who cites usage of both **ok** (and) and **og** (and) in the Folden area of Norway. Both **ok** and **og** are found on the Kensington inscription.

G. CHARACTERISTIC PHONOLOGY OF OLD BOHUSLÄNSK

Old Bohuslän has the following phonological similarities with the Kensington dialect:

1. Use of **a** before **rdh**, as in **fardh** (trip) as per Grøtvedt (1939:161-2). This is the spelling on the Kensington Runestone.
2. Use of **y** < **iu**, per Grøtvedt (1939:161-2), just as in **skylar** (shelters) on the Kensington Runestone, and not **skiul** (shelter).
3. Strong tendency to use **aa** for long **a**, as per Grøtvedt (1969:283) and as seen in **fraa**, **fraam**, **paa** and **vaare** (from, from, on and our) on the Kensington Runestone. In medieval times the **o-rune** stood for both the **aa** and **o** sounds, and these four words could just as well be spelled **fro**, **from**, **po** and **vore** as in fact elected by Hall in Figure 1.
4. Pronunciation of **fram** (forward) in the modern Bohuslän dialect is as **from**, per Bjørseth (1946:100). At the time of the Kensington Runestone inscription, the Bohuslän **from** (forward) also had the meaning (from), and it is spelled with the **o-rune** on the Kensington inscription.
5. Use of stressed **o** < **u**, as per Grøtvedt (1969:284), just as in **optage** (acquire) on the Kensington Runestone.
6. Frequent use of the svarabhakti vowel **e**, **a** or **u**, reported by Grøtvedt (1969:229). This was particularly used before **l**, **n** and **r**. **E** was the most frequently used svarabhakti vowel, just as in **fræ-e-lse**, (save) seen on the Kensington Runestone.
7. The lowering of **i** > **e** was much in evidence, as per Grøtvedt (1969:284), such as in **havet** (the sea) and **vedh**, but not the **i** in **skip** (ship), just as found on the Kensington Runestone. See Grøtvedt (1974:73) for an example of **vedh** (by) from AD 1406.
8. Vocal harmony caused more use of **e** and **o** endings than normal, as per Grøtvedt (1969:48-50). For example, **thesso men** as well as **thesse men** (these men), are cited by Grøtvedt (1974:164). Thus, **theno**, as seen on the Kensington inscription, and not only **thenne** would have been a possible spelling in Old Bohuslän.

H. MORPHOLOGY OF OLD BOHUSLÄNSK

Morphologically, the Kensington dialect agrees with Old Bohuslänsk thusly:

1. An early loss of case endings as reported by Grøtvedt (1969:297-301 and 1954:64). **Vedh havet** (by the sea), **fram theno øh** (from this island) and **fra theno sten** (from this stone), all of which are on the Kensington Runestone inscription, have direct parallel usage in Bohuslänsk.
2. Use of **wi** instead of **wir** (we) in AD 1366, per Grøtvedt (1969:304). This is the usage on the Kensington Runestone.
3. Use of **ok** for **at** (to), as in **ok fiske** (to fish), per Grøtvedt (1974:123), and as used on the Kensington Runestone.
4. Use of **se** not **sea** (see) in AD 1418, as per Grøtvedt (1969:261), such as in **se æptir** (see after) as used on the Kensington Runestone.
5. Use of **ar** plural ending for **ia**-root words, as per Janzén (1935:333-37), and as seen in **skylar** (shelters), an **ia**-root word used on the Kensington Runestone. The modern plural is **skyl** (shelters,shelter).
6. Use of **man** (men) for the plural, as per Janzén (1935:38), just as used on the Kensington Runestone.
7. Use of **hawer** (have) and **havr** (have) as forerunner to **har**, per Grøtvedt (1969:217). **Har** (have) is the form used on the Kensington Runestone and **haar** (have) appears in the Söderwall Medieval Swedish Dictionary as from AD 1320.
8. Use in AD 1380 of **hadhe** (had), reported by Grøtvedt (1969:217). This is the Kensington Runestone spelling.
9. Use of **æptir** (after), as per Grøtvedt (1969:294), which is the form on the Kensington Runestone.
10. Third singular present verbs are used with third plural subject, as **wi var** (we were). This is the form used on the Kensington Runestone.
11. Use of **fan** for plural subject, as shown by a letter of AD 1403 from Tønsberg, a city just across the fjord from Bohuslän, and a trading partner. The writer attempted plural case endings, the form of which show he did not use such endings in speech, as per Seip (1954:200). **Wi fan** (we found) is found on the Kensington Runestone.

I. THE LINGUISTIC DEBATE OVER "SURE PROOFS OF FORGERY"

The eight items which Wahlgren (1952 and 1958) and Moltke (1950, 1951 and 1953) considered "sure proofs of forgery" are:

1. **dhagsrise** and/or **dhaghrise** (day's journey or progress), which Wahlgren (1952:62) maintained was seen first in AD 1599.
2. **opdagelse** (discovery), which Moltke and Wahlgren (1952 and 1958) maintained was a modern word first seen in the 19th century.
3. **rise** (journey), with long **i**, which was assumed not to be a Middle Lower German loan word for "journey" or "trip", unless spelled with **ei** or **e**.

4. **skjar** (skerries), which should have been spelled with **æ** and not **a**, and in any case the **j-rune** did not exist in the 14th century.
5. **ded** (dead), with **ð** delabialized to **e**, which was then assumed to be the English word "dead" and not the usual Scandinavian **dōðh** (dead).
6. **fardh** (journey), should have an **æ** and not **a**. Thus it was assumed to be modeled on the English word "fare".
7. **fraam** or **from** (forward, from) was assumed to be the English word "from" and not related to the Old Scandinavian **fram** (from).
8. **ok fiske** (to fish) had already been attested to by K.M. Nielsen (1950:81) negating the proof of forgery by Moltke and Andersen (1950:57) and Wahlgren (1952:66). Grøtvedt (1974:123) confirms this usage in the Folden area of Norway already during the period AD 1350-1450.

J. NEW LINGUISTIC EVIDENCE

The following paragraphs address these "sure proofs of forgery." As can be seen, all these words on the Kensington inscription have a genuine medieval Scandinavian origin.

1. **Dhagsrise** (day's journey) appears as **dagsreysæ** (where **d** < **dh**) in the 14th century Peter Laale Proverb No.D286. The oldest surviving documentation is an AD 1506 book. The below quotation from Wahlgren (1952:62) clearly shows how unreasonable his position has been regarding words he did not completely research:

The word or words appearing as "en dhagsrise" (day's trip) and as "14 daghrise" (14 days trip) contribute another block to a 14th century origin for the Kensington inscription. The combined testimony of Söderwall's Dictionary of Medieval Swedish and the Swedish Academy Dictionary, and the language based on historical principles is that the word **dagresa** (days trip) was not in use before 1599 ... The author of the inscriptions simply made a poor choice of words. Once again we are confronted with a modernism.

By Wahlgren's own admission he checked only two dictionaries, both of which were well known to be under continual supplementation and hence incomplete. But scholarship required more than a quick check of incomplete dictionaries and Wahlgren's own opinion on **dagrise**. Proof of the earlier origin of the word could have been easily obtained in Kock (1889-94:D286) as well as later in Hansen (1962:228) by a simple check of the word registers.

2. **Opdagelse** (**opthagelse**) (discovery). **Opdage** on the stone is spelled in runes as **op(th)age** and the third rune, **thorn** (**p**), was transliterated by all previous investigators as **d** or **dh**. No investigators have suggested that the other sounds represented by the (**p**)-rune, which are **th** and **t**, were a possibility, thus yielding **opt(h)agelse**. This word appears in the West Gotland Law of AD 1275. One meaning of **optage** is to take possession of unpopulated and unbuilt land, and this translation suits the wording of the inscription very well. As cited by Bertelsen (1904 II,114), the word **optaghe** appears in the **Bagersvendes Skraa** (Baker's Guild Law) of Copenhagen in AD 1403 in the meaning "establish," which is the meaning

of the modern Danish word **oprette**. The meaning, then, is the "taking up" or "assumption" of something, such as land. In many dialects, as evidenced by the surviving manuscripts, the root word **tage** (take) has been spelled with a **th** as **thage**. The use of the **p-rune** corresponds well with the evidence that the transition from **p** to **t** in many words started around AD 1325 and was completed by AD 1400. Other investigators may have discounted **opthagelse** because of the later popular connection with its use concerning the assumption or taking up to Heaven (**optagelse til himmelen**) of the Virgin Mary.

3. **Rise** (travel or journey) has been assumed by some past critics to be the modern Danish **rejse** (journey). Holand (1940:300-302) and K. M. Nielsen (1950:78) both confirm that the Old Scandinavian word **reisa** or **reysa** has come as a loan from the Middle Low German words **reisen** and/or **risen** (journey). Since K. M. Nielsen (1950:77-78) found no Scandinavian usage with the spelling **rise** (trip), he chose to assume the word to be unattested. Olsen (1960:246) has shown that many Norwegian runic inscriptions have **i** for the expected **e**. Thalbitzer (1951:Fig.E) also shows that the **i-rune** (**I**) was sometimes used for the letters **ei** or **ey** in Greenland. Thalbitzer's Figure 6 is reproduced by Nielsen (1987:Fig.9). Therefore, the transliterations could possibly be **rese** < **rise** or **reise** < **rise** (trip). Grøtvedt (1970:173) also reports **reeso** in use in the Folden area of Norway in AD 1433.

Inexplicably, all investigators since Minnesota Historical Society (1910:274) have failed to discuss the Kalkar (1881-1925:572) citing of **rijsæ** (journey), which appears in the Peter Laale Proverbs (14th century:Verse D955). The proverb is "It is difficult for an old man to journey up a mountain." **Rise** possibly had a slightly different meaning than **reise** (journey), as perhaps for example "progress", as discussed by Kock (1889-94:354).

4. **Skylar** (hiding place) and **lunde-skyl** (grove) instead of **skajr** (skerries) has been discussed by R. Nielsen (1987:App.1), who has shown that the so-called **j-rune** (**f**) is in fact a crossed **L-rune** (**f**) used during medieval times for the palatalized L-sound, which was either **yl** or **lj**. This would then yield **skylar** as the plural of **skyl** (hiding place or shelter). Thus, the inscription reads in part as "had camped by two shelters or hiding places."

5. **Dhedh** (dead), usually would be found spelled as **dhódh** (dead). In the Kensington Runestone phrase **róðhe af blodh og dhedh** (red with blood and dead), **dhedh** (dead) should also have an **e** plural adjective ending **e** just as in **róðhe** (red). However, the Latin AVM follows **dedh**, and it is not unusual for a runic inscription to lose a termination vowel in this position, per Thompson (1976:66C). Brøndum-Nielsen (1962:30,31) in any case shows that the neuter plural ending was often dropped from the word **dódh** (dead) and this must also apply to the masculine.

There is ample evidence that **ø** was often delabialized to **e**. Holand (1940:306) points out several examples including **redh** for **ródh** (red). Knud Jul, a writer at the Sorø Monastery in Denmark, has often delabialized his **ø** to **e**, as reported by Kristensen (1933:187-88) who believed delabialization to be a dialect matter, not a case of misspelling. Brøndum-Nielsen (1951:para. 134,141) also cites a number of examples.

K. M. Nielsen also considered that Queen Margrethe's spelling of **ded** (dead) could be an error by the Queen. However, he has also acknowledged that the form **dhedh** (dead) was not impossible. This point was also raised by Noreen (1942:90), who stated that traces of the development of the word **ded** (dead) could be found in the Scandinavian record. As reported by the Minnesota Historical Society (1910:265), the spelling **dedh** (dead) occurred in Denmark as early as AD 1390. In fact, Jansson (1934:113) cites **odhedelik** (immortal) in line 200 of the Codex Passionarius of AD 1450-70. This is quite significant because it is a second example of the delabialization of Queen Margrethe's **ded** (dead), and also shows the use of the **p-rune** for **dh** for the initial letter of **dhed**. The original Codex Passionarius dates from before AD 1350.

In spite of the above, **dhedh** could very well be the word **thedh**, which is the modern **det** (that). In the Old Scandinavian conjunctive usage, however, it was spelled such as **thedh**, **theth**, or **thet** (in that, therefore, or thus). Grøvedt (1974:181) reports on its usage in the Folden area of Norway. In the 17th century this word was actually spelled **ded** as per Hansen (1971:282). Noreen (1970:250) gives the various meanings of the conjunctive **theth**.

It is incredible that Wahlgren (1986:103) still flatly states that **ded** is an English word and proof of forgery, and does not tell his readers that Queen Margrethe used **ded** in a letter of AD 1390. Wahlgren is **ded** wrong about dead.

6. **Fardh** (trip) was also of concern to Wahlgren (1952:65), who stated:

If, during the 14th century or subsequently, the word was ever pronounced as here suggested fardh (trip), it has left no trace behind in the spelling and pronunciation of faerd (trip), which is evidence of a consistent trend since early times.

Moltke and Andersen (1950:58) considered **fardh** to be sure proof of forgery and alluded to the English "fare", as in "farewell", as the model for this word. None of them discovered that **far** (trip) was reported in Söderwall's Dictionary and noted by Ronge (1957:292). The drop of **dh** after **r** in **fardh** is what would be expected. In any case, Grøtvedt (1939:161-62), reported that in Old Bohuslän that **a** before **rdh** did not become **æ**, and he actually gives **fardh** (trip) as an example. **Fardh** (trip) not only supports the authenticity of the Kensington Runestone, but narrows the dialect of the language to Bohuslän.

7. **Fraam** (from) was objected to by the opponents of the Kensington Runestone due to the fact that the **aa** form **fraam** (forward or from) had not been found in the written record, while the forms **fraa** and **fraan** (from) did and continue to exist even today in modern Swedish. However, the attested **fram** was undoubtedly pronounced **fraam** in the 14th century. Seip (1955:272) reports that the letter **a** was also used orthographically for **o** or **aa** (and the rune for **aa** and **o** was the same). In any case, K. M. Nielsen (1950:78) admits the form **fraam** (forward) shows that the preposition **fram** (from) was undoubtedly spoken in some dialects as **fraam** (from). Hansen (1962:358) has found **fraam** (in the meaning of the adverb forward) in AD 1550. One of the dialects of Bohuslän also

has the phonology **from** with **o** for the pronunciation of **fram** (forward), as reported by Bjørseth (1946:100).

K. OTHER LINGUISTIC SUPPORT OF HALL'S THESIS

Hall (1982) in support of Hall (1981) advanced excellent arguments in favor of the authenticity of **dagrise**, **dedh**, **fraam** and **rise**. Hall (1982) assembled a number of other arguments for other words which have been questioned in the past by Jansson (1949), Moltke and Andersen (1950), Moltke (1951, 1953) and Wahlgren (1958). Words attested by Hall (1982) and in part leaning on Hagen (1950) and Thalbitzer (1951) are:

1.	ahr	(year)	use of h
2.	fraeelse	(save!)	e -ending
3.	har	(subjectless verb have)	
4.	norr	(north)	use of rr
5.	norrmen	(Norwegian)	use of rr
6.	thenno	(this)	use of o
7.	öh	(island)	use of h

In his unpublished paper, "The Linguistic Evidence on the Kensington Runestone," the author adds the following attestations which support Hall:

1. Early use of the **hr** digraph and **rr** digraph. Thus, **ahr** = **arr** = **aar** (year). See Hansen (1962:343,371) where **rr** indicates vowel length, and the **hr** is either a pause form or indicates vowel length as per Hall (1982:15).
2. Use of **haar** = **har** (have) in Söderwall's Dictionary from AD 1320. See also paragraph H-7.
3. **Norr** (north) with double **rr** is to be found in Mandeville's Rijse by Lorenzen (1882:27). This dates from circa AD 1460
4. **Norrmaennr** (Norwegian) with double **rr** is found on Upsala Inscription No. 258 (Fresta Krylia) of AD 1150, as per Thompsen (1976:19).
5. **Thenno** (this) may well be the employment of the rare dative neuter singular as advocated by Hall (1982), but it could certainly also be due to the vowel harmony, **e:o** and **a:o** prominent on the west coast of Sweden, including Bohuslän as discussed in paragraph F-8.
6. Final **h** as in **öh** (island) is found with other words such as **döh** (dead) for **döö**, or **dödth** (dead), as per Brøndum-Nielsen (1932:338).

Table 1 shows the striking duality of the Kensington language dialect. Table 2 depicts how the entire Kensington text can now be attested by the examples in this paper.

L. CONCLUSION

From the work of Grøtvedt (1939,1954,1969,1971,1974) it is apparent that the spoken dialect of Bohuslän and the Folden area of Norway was much like spoken Norwegian today as can be seen by a modern rendition of the Kensington text:

8 góter og 22 nordmenn på opptagelseferd fra Vinland vestover. Vi hadde leir ved 2 skjul en dags reise nord fra denne sten. Vi var og fisket en dag. Etter vi kom hjem fant vi 10 menn røde av blod og døde. Hils Jomfru Maria frelse fra ille. Har 10 mann ved havet og se etter våre skip 14 dagsreiser fra denne øy år 1362.

A modern ring is not atypical of the spoken language of the 14th century as illustrated by Peter Låle's Old Danish Proverb D286, given by Hansen (1966), where **Lidhen hæsth gør stacket dags reyssæ** is in Modern Danish **Liden hest gør stakket (kort) dagsrejse** (a small horse does a short day's journey). The oldest recorded Scandinavian song, as recorded by Thorsen (1877:69), must have represented the spoken language of AD 1300 since **Dromde mik æn drom i nat um siLke ok ærlig pæL**, is rendered in Modern Danish as **Jeg dromte en drom i naten om silk og erlig pels** (I dreamed a dream in the night about silk and real "costly stuff"). The tune to this verse has always been the theme song of Danish Radio. Note that **pæL** is now out of use but meant "costly fabrics", possibly like satin. **Pels** now means "fur."

Table 1 shows the language usage on the Kensington inscription is typical of many other medieval manuscripts with dual spellings and a choice of vocabulary appropriate for the 14th century. Thus, the Kensington inscription shows runic letters and language impossible for anyone to have forged in the 19th century. If further investigations of other Scandinavian inscriptions in America are shown to have appropriate linguistic and epigraphic forms, then one must consider a potential impact of an exchange of trade goods and wares in pre-Columbian times.

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Table 1

LANGUAGE DUALITY EXHIBITED ON THE KENSINGTON RUNESTONE

Usage	Usage One	Usage Two	Notes
ok/at	ok fiske (to fish)	at se (to see)	Two uses of the preposition <i>ok</i> and <i>at</i>
ok/og	ok 22	og dhedh	Unvoiced <i>k</i> to voiced <i>g</i> common in Bohuslän
fraa/ fraam	fraa winlandh (from Vinland) fraa theno sten (from this stone)	fraam theno øh (from this island)	Usual mixture of the preposition <i>fraa</i> and <i>fraam</i> in 14th century
wedh we	wedh 2 skjar (by 2 skerries)	we havet (by the sea)	dh was often dropped before a following <i>h</i>
dagh/ dag	dagsrise (day's progress)	en dagh (one day) daghrise (day's progress)	Interchange of <i>gh</i> and <i>g</i> was used without logic in Medieval times
dags/ dagh	dagsrise (day's journey)	daghrise (day's journey)	Possessive <i>s</i> often lacking in 14th century manuscripts
rødhe/ dedh	rødhe af blodh (red from blood)	og dhedh (and dead)	Delabialization of <i>ø > e</i> common in 14th century. Missing plural endings such as in <i>dhedh</i> are not unusual in 14th century writing
af/ fraa	rødhe af blodh (red from blood) af illy (from evil)	fraa theno sten (from this stone)	Both usages are correct even today
af/ of	of west (round about west)	af illy (from evil)	<i>af</i> and <i>of</i> were interchangeable and <i>ef</i> was used on occasion
fardh/ rise	dagsrise/ daghrise (day's journey)	optagelsesfardh (acquisition trip)	<i>fardh</i> was an Old Scandinavian form and <i>rise</i> was a loan word from Middle Lower German
men/man mans	norrmen (Norwegians)	10 man (10 men) 10 mans (10 men)	<i>man</i> and <i>men</i> still modern usage <i>mans</i> usage stopped c. AD 1550
æptir	at se æptir (to look after), adverb	æptir wi kom hern (after we came home), prep.	This early use of <i>æptir</i> as an adverb has precedence in Medieval Scandinavian
ahr/ paa/ fraa/ fraam/ vaare	ahr long <i>a</i> = <i>ah</i> or <i>hr</i> is a digraph	paa/fraa fraam/vaare long <i>a</i> = <i>aa</i>	All but <i>ahr</i> have rounded long <i>a</i> , but <i>ahr</i> has an <i>hr</i> digraph to indicate a vowel length or pause stop which has precedence in Medieval Scandinavian

Table 2
ATTESTATION OF THE KENSINGTON INSCRIPTION

	Phrase or Word	Meaning	Attestation
1.	22 Norrmen	22 Norwegians	Paragraph K-4
2.	ok	and	Table 1
3.	8 Góþer	8 Goths	Figure 1
4.	paa (xxxx)o	on this (assumed)	Paragraph G-3
5.	oppagelse	acquisition	Paragraphs G-5, J-2
6.	fardh	trip	Paragraphs G-1, J-6
7.	fraa	from	Paragraph G-3
8.	Vinlandh	Vinland	Common Old Scandinavian
9.	of west	around about west	Table 1
10.	hadhe	had	Paragraph H-8
11.	laeger	camp	Common Old Scandinavian
12.	wedh	by	Paragraph G-7
13.	2 skylar	2 shelters	Paragraphs G-2, H-5, J-4
14.	en	one	Paragraph F-1
15.	dagsrise	days trip	Paragraphs J-1, J-3
16.	norr	north	Paragraph K-3
17.	fraa	from	Paragraph G-3
18.	theno	this	Paragraphs G-8, K-5
19.	sten	stone	Paragraphs F-1, H-1
20.	wi var	we were	Paragraphs H-2, H-10
21.	ok fiske	to fish	Paragraphs F-2, H-3, J-8
22.	en dagh	one day	Table 1
23.	æpter	after	Table 1, Paragraph H-9
24.	wi kom	we came	Paragraphs H-2, H-10
25.	hem	home	Paragraph F-1
26.	fan	found	Paragraphs H-10, H-11
27.	10 man	10 men	Table 1; Paragraph H-6
28.	rødhe	red	Paragraph F-1
29.	af blodh	from blood	Table 1
30.	og	and	Table 1; Paragraph F-3
31.	dhedh	dead (thus)	Paragraphs F-1, J-5
32.	AVM	Ave Maria	Latin for Hail Mary
33.	fræelse	Save!	Paragraph G-6
34.	af illū or (illy)	from evil	Table 1
35.	har	have	Paragraphs H-7 and K-2
36.	10 mans	10 men	Table 1
37.	we	by	Table 1
38.	havet	the sea	Paragraph H-1
39.	at se æptir	to see after	Table 1
40.	vaare	our	Table 1
41.	skip	ship	Table G-7
42.	14 daghrise	14 days trip	Table 1; Para. J-1, J-3
43.	fraam	from	Paragraphs G-3, G-4, J-7
44.	theno øh	this island	Paragraphs F-1, G-8, K-5
45.	ahr 1362	Year 1362	Paragraph K-1

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LATIN *URUUS*: AN EXERCISE IN HISTORICAL
SEMANTICS AND WORD-FORMATION*

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1.0 One of the primary tasks of the linguist engaged in semantic reconstruction is to ascertain whether two apparent homophones are in reality polysemy. First, the linguist focuses on contexts that show that two variants are conditioned members of the same unit. Second, he makes inferences about the most likely semantic changes. Third, he uses this information to establish earlier stages. When applying the principles of historical semantics to define what possible semantic shifts have taken place, the historical linguist obtains two things: the means of making inferences about the context, and of highlighting the iconic and indexical forces of semantic change in connection with the total cultural and archaeological evidence. The formal apparatus of language is rather conservative when compared with human culture which constantly expands and necessitates new semantic divisions.

In this paper I intend to demonstrate that Latin *uruus* 'delimiting furrow' and Latin *uruum* 'bend of the plow' are polysemic forms and have cognates in Oscan *uruvú* 'boundary'; Greek *ῥπος/ῥπον* 'boundary-furrow'¹; and Mycaenean Linear B *wo-wo*, interpreted by Indo-Europeanists as *wo(r)wo(s)*. Their phonological and morphological make-up point to a Proto-Indo-European (PIE) root **wer-* 'turn, bend'. Their semantic sphere and subsequent semantic shifts illustrate mechanisms of change and, at the same time, shed light on the Indo-European technology and culture prior to the development of a fully agricultural society, when the invention of the plow resulted in the adoption of new vocabulary and relegated the old forms to a restricted function.

2.0 Meringer (1904/1905:157) stated that to understand the gloss of Lat. *uruus* '*circuitus ciuitatis*' one must analyze the meaning of Gk. *ῥπος* 'limiting furrow' and Osc. *uruvú*. Osc. *uruvú* is a *hapax legomenon*.² It appears in an inscription on a limestone tablet dated about the middle of the second century B.C. The inscription concerns the legal status of a sanctuary which straddles the boundary dividing two towns (Pulgram 1960:16-29). Buck (1904:230) glosses Osc. *uruvú* as '*curua flexa(?)*'. Vetter (1953:55) as *uruata*

*This paper was one of two which received the Presidents' Commendation.

making reference to Lat. *uruāre* 'to mark a boundary with a furrow'.

The principle source for the meaning of Lat. *uruāre* is a quote from Festus (514.22), who states that in the tragedy *Andromeda*, Ennius uses the verb *uruat* in the sense of 'surrounds', from that furrow which is made by the *uruo aratri* 'bend of the plow' when founding a city. Ennius' statement is supported by other ancient authors: Varro (LL 5.135), Paulus Diaconus (F 515.10), and Seruius (On Aen. 1.12).³ It establishes two things: first a ceremonial furrow circumscribed the area designated for the founding of a town. Second, both the furrow and the plow are connected.

The neuter noun *uruum*, designated the 'bend' of the plow. The furrow made by the plow was called *uruus* (CGL IV 196.3). The clearly denominative nature of the verb *uruāre* itself leads us into postulating a noun (Ernout-Meillet 1959:755). From the Latin evidence we can reconstruct two forms: PIE **ur̥-ur̥-om/ur̥-ur̥-os*. Osc. *uruvū* grammatically could be understood either as a feminine verbal adjective meaning 'plowed' or as a feminine noun meaning 'furrow' from a PIE form **ur̥-ur̥-ā*. However, neither Oscan nor even Latin contain enough material to obtain a clear meaning for the above mentioned terms. We are left with a vague notion of 'furrow', 'boundary', 'bend', and 'plow'.

Greek appears to be more helpful. The cognate term is attested in several dialects⁴: Ionic *οὔρος*, Corcyrean *ὄρος*, and Doric *ῶρος* with the meaning of 'boundary-furrow'. Also attested is the feminine noun *ὁρία* 'path' and the neuter form *ὄρον*, pl. *ὅρια* 'limit, distance, range' (Il. 23.431; Od. 8.124).

Rules of word-formation in Indo-European do point to a PIE stem **wor-ur̥-*. We can reconstruct a masculine agent noun **ur̥-ur̥-os* giving Gk. **Fóρος* > Attic *ὄρος* and a neuter action noun **ur̥-ur̥-om*, Ion. *ὄρον*. The alternation of gender is explained by the suffix. This suffix was used to form adjectives. It is important to note that in the protolanguage feminine singulars and neuter plurals were formally identical (cf. Greek neuter plural subject used with singular verb). It is conceivable that the neuter singular is a back formation and the masculine arose still later. (Homer uses the neuter).

3.0 In analyzing possible semantic shifts, Greek, which has the greatest number of glosses, is most useful. The notion of 'range, distance' that is found in Homer is due to a shift of properties expressing denotational and/or connotational characteristics. At first, the term designated a 'furrow' -- a particular

kind of furrow which a team of oxen plowed in one day (cf. custom of appropriating land plowed in one day). The length of the furrow was therefore fixed. It must have made a convenient reference for measure; hence, the meaning of 'distance, range (of a furrow)' became referential, while 'of a furrow' became inferential. Also, if the furrow functioned as a dividing line between two areas, the semantic shift from 'furrow' to 'boundary' holds no mystery. A further shift occurs in Mycaenean, where the word *worwos* 'boundary' also came to mean 'land enclosed within boundaries', therefore, a 'portion of land'. Since cattle were stationed in places designated by Myc. *wo(r)wo(s)* following a man's name in the genitive, *wo(r)wo(s)* must have indicated an area of land which Palmer defines as useful for 'steading' (Palmer 1963:464). This suggests the idea of a piece of land claimed by settlers, that is, of a field enclosed within boundaries. A homological parallel exists in English where the word *furrow* also has the meaning of 'a quantity of land having the length or breadth of a furrow' (OED compact ed. s.v. "furrow").

4.0 Greek cognates can elucidate the transition from 'furrow' > 'boundary' > 'land circumscribed by boundaries'. This furrow was not used for sowing (cf. Lat. *sulcus*, Gk. *ὄλαξ/ἀῖλαξ*). It is indeed possible that originally it was not made for agricultural purposes at all, but even before the invention of the plow it was used to mark out an area.

Historical investigation must take into account the total cultural and archaeological record to shed light on the mechanism of language change. The cultural environment shows gradience between situations and objects and aids in analyzing semantic reinterpretation. This is especially true in relatively obscure cases such as Lat. *uruum* 'bend of the plow', which may be a relic. Indeed, Hesiod, an early Greek poet who flourished around 700 B.C., reports the use of a single-pieced ard, as well as a jointed wood plow (Works and Days 427-36).⁵

Before the appearance of the plow, the ground was broken up with the aid of a digging stick or a hoe. A digging stick was a strong, pointed stick (Curwen 1953:64), either curved or bent at an obtuse angle, which facilitated levering up the soil (Feist 1913:175). Puhvel investigated historical and linguistic factors in relation to the Indo-European plow. He states: "indications are that the earliest type was a wooden hook-plough, such as has survived longest in eastern Europe, especially in the Slavic domain" (1970:177-78). Indeed, Russ. *sokhá*, Lith. *žagrė*, Goth. *hōha*, OIr. *cecht* are derived from words with the

meaning of 'bough, pole, branch': Lith. *šakà*, *žāgaras*, OCS *spkŭ*, Welsh *cainc* (1970:177-78).

Lat. *uruum* was a verbal adjective (cf. *g^wiH-uo*) which underwent metonymic nominalization in Latin and in Oscan. Initially, it designated the curved branch used as a scratch-plow (*ard*). This one piece of wood was so shaped that it possessed all the essential parts needed. But one piece of wood combining the three members, that is, the stock, the pole, and the tail, must have been rare. As technology advanced, the scratch-plow was modified. First, a tail was artificially inserted to the stock and pole made of a branch curving sharply (Gow 1946:53). Eventually, these were also fashioned separately and all three pieces were artificially joined. The term *uruum* 'scratch-plow (*ard*)' underwent semantic narrowing and indicated the part of the plow that was 'curved', then by synecdoche the 'furrow' used to mark boundaries. (Cf. Lat. *sulcus*, OE *sulh* 'plow'; Gk. *αῦλαξ* 'furrow'; Dor. *εὔλάκῃ* 'plow').

5.0 Festus describes the plow used to mark the limits of the city as a pole with one end connected to the *iugum* 'yoke' and the other a bend ending in a *dens* 'tooth', to which was attached the *uōmer* 'plow-share'. "*buris* est curuamentum aratri...dentale est aratri pars prima; in quo uomer inducitur quasi dens; '*buris* is the bend of the plow, the *dentale* is the first part of the plow; in which the share is inserted like a tooth'" (etym. XX. 14.2).

Varro, a practical farmer and a student of agriculture, gave a description of the plow and an etymological explanation for the names of each part of the implement. Under *uruum* Varro (*de lingua Latina* 5.135) stated: "Qui quasi temo est inter boues, bura a bubus; alii hoc a curuo *uruum* appellant. 'That which is so to speak a wagon-tongue between the oxen is called *bura* "beam" from *boues* "oxen"; others call this *uruum* from *curuum* "curve"'. One must assume that *uruum* was used as a synonym of *bura* and referred to the upper part of the plow; *uruum* also meant, the 'bend of the plow' and referred to the lower part: "*buris* est curuamentum aratri; alii burim curuaturam temonis quae supra est et quod est infra, *uruum* dicunt. '*buris* is the bend of the plow....Others call *buris* the upper bend of the wagon-tongue and *uruum* what is underneath'" (Seru., in georg. I. 169-170).

In either case, *uruum* holds the notion of 'curve'. Thus the *uruum* 'curved, crooked', initially a verbal adjective could have designated the instrument itself by metonymy. Metonymy and ellipsis interlock extensively. Ellipsis could have occurred in the syntagma *uruum arātrum*. Forms that are semantically

the same tend to be leveled out. The formal split may lead to a semantic split, in which case, the marked form is kept in the language for a while with a specialized meaning before dropping out all together.

IE Scholarship on *uruum*, -f nt. is scarce. Froehde (1874:254; 1889:105) glosses the Latin term *uruus* as 'crooked, curved'. He derives the term from an earlier form **vorgvus* < PIE root **wer-* 'to turn' and the suffix *-g^w-*. This semantic postulation is supported by Varro (*De lingua Latina* 5.127) "*Amburuo* <m> fictum ab *uruo*, quod ita flexum ut redeat sursum uersus, ut in aratro quod est *uruum*. '*Amburuum*, a pot whose name is made from *uruum* "curved", because it is so bent that it turns up again like the part of the plow which is named the *uruum* "beam".'"

Phonologically one may also easily derive from a PIE form of the shape **w(e)rg^w-os/*wraig^w-ós* Gk. *παῖβος* 'twisted' and Goth. *wraigs* 'twisted', though the intrusion of the *-i-* is not easy to explain. The PIE root **warg-* > Skt. zero-grade *vrjiná-* 'twisted', Lat. *uergō*, -ere 'turn'. These are feasible connections on semantic grounds. But Froehde's suggestion that the voiced labiovelar suffix *-g^w-* may be subject to a sound change where the *-g-* is dropped and only *-w-* remains is just a vague possibility, unless more evidence could be adduced to support such a sound change in Latin (cf. Lat. *toruus*).

Persson says that in the case of Lat. *uruum*, if one assumes that 'turned, crooked' was the original meaning of the rare word, this should be viewed as a *-y-* derivation of the unexpanded PIE form **wer-*; Lat. *uru-* from **ur-u-* corresponding to Lith. **vir-v-* in *viřvé* (also Lett. *virve*) 'rope, cramp, turning, something which is turned' and that even if a *-g-* had been lost between the *-r-* and the *-u-* in *uruum*, still it is not necessary to derive it from **wrguom* but *uruum* could have developed just as well from **wrg-uo-m*; that is, a base form with the suffix **-wo-*.

6.0 In conclusion then, the root **wer* 'turn, bend' has an adjectival formation **wor-y-/*wr-y^s* 'crooked'. This form designated a crooked branch as in Lat. *uruum*. The branch was used to plow a boundary line. The boundary line in Indo-European culture customarily separated one piece of property from another. This line was a furrow or a strip of uncultivated land. Roman law required a strip of land between houses (Fustel de Coulanges 1956:63). This strip of land also functioned as a pathway or, as Varro says, an edge-road.⁷ Boundary-furrows which also functioned as paths -- contrary to furrows made by plows drawn by oxen for agricultural purposes -- curved around the

physical features of the land. They were 'crooked;' thus the notion 'crooked, curved' referred to the boundary line, to the path and to the plow itself.

In Indo-European we have initially an iconic description which becomes indexical in the daughter languages. Once the feature 'crooked' is lost, the term becomes a symbol and only the meaning of 'boundary' and 'path' remain. Following the principles of historical comparative reconstruction, it is reasonable to postulate one root with the meaning of 'turn', PIE **wer-* and its ablauted reflexes, plus the root extension **-u-*, from which we derive the secondary meanings of 'furrow' > 'boundary' > 'path' and 'plow'. This hypothesis is phonologically explicable and conserves both the semantic and the morphological categories.

Culture expands constantly, necessitating ever new semantic divisions. This study suggests that in unravelling possible semantic shifts and differentiating homophones from polysemy the linguist highlights the iconic and indexical forces of change within the total cultural evidence. More work must be done in this area.

Pokorny posits 13 roots **wer-*, Watkins 8. Not all of them could possibly be homophonic, some must be polysemic. Roots 5 'to cover', root 7 'to scratch', and root 8 'to guard' need to be reinvestigated. For example, if a boundary functions as a barrier and a barrier represents protection we could add to the list of cognates also **yor-yo-s* > Gk. *οἶκος* 'warden, watcher' A. Meillet has already shown us the way in his study of the semantic sphere covered by PIE **phtér*. In reconstructing the Indo-European lexicon one must take into account the spectrum of meaning. This can only be done by looking at the semantic developments in the daughter languages. We must tighten our hold on morphophonemics, we must re-examine the laryngeals and re-evaluate the Schwebelaut as Anttila has done so that we can reclassify Indo-European roots according to semantic concepts, for semantics is the deepest level of grammar.

NOTES

1. Attic $\delta\rho\omicron\varsigma$ is the ordinary word for a boundary-marker of whatever kind, including one inscribed stone with $\text{HOPO}\Sigma$ in the old Attic alphabet (Saul Levin pers. com.).

2. In such a minute corpus, a lone occurrence affords no presumption that the word was rarely used.

3. Paulus (515) has *ueruat*; Varro (*De lingua Latina* 5.135) and Servius (*Aeneid* 1.12) write it with a *u*, but Pomponius (*Dig.* 50.16.239) and Isidorus (15.2.3) with a *b*, no doubt from the root $*wer$ 'to turn, to curve, to drag'.

4. In Greek, IE $*w$ was reflected by the unstable consonant *F* (digamma), which was partially lost in most dialects and in Homer, where in the absence of the letter, the meter often calls for a missing consonant. It was entirely lost in Attic and Ionic. Attic writers use a β or υ to express this alien sound (Brugmann 1906:para. 163). The sound of *F* resembled English *w*, and later, in the Hellenistic period, became a fricative represented by β , e.g. $\beta\omicron\iota\kappa\iota\alpha\rho = \text{Foikias}$; $\beta\epsilon\kappa\acute{\alpha}\tau\epsilon\rho\omicron\iota = \text{Fekáteroi}$. The loss of *F*, with lengthening of the preceding vowel, occurred in Ionic and other dialects ($\delta\rho\text{Fos} = \text{o}\delta\rho\omicron\varsigma$). Cretan is a Doric subdialect, but noted for loss of $[-H-]$, unlike most of the subdialects. *F* was also lost without lengthening in some dialects, represented by Attic ($*\delta\rho\text{Fos} > \delta\rho\omicron\varsigma$) (Buck 1933:136-37). $\beta\epsilon\sigma\omicron\rho\text{-}\acute{\iota}\theta\omicron\varsigma$ reflects a West Greek $[\text{we}\theta\omicron\acute{\zeta}]$. $\beta\epsilon\sigma\omicron\rho$ looks most like the dialect of Elis: Fesop ; but the $-\sigma-$ suggests Laconia (Saul Levin pers. com.). When Hesychius consults written records, he treats *F* as a variant of $\sqrt{\text{w}}$ (or rarely *P*), thus Hesychius $\gamma\eta\mu\alpha\cdot\iota\mu\acute{\alpha}\tau\iota\omicron\nu = [\text{we:ma}]$ ($< *wes\text{-}mn = \text{Attic-Ionic } \epsilon\acute{\iota}\mu\alpha$, a misreading of Cretan $*\text{F}\eta\mu\alpha$. But this alternation could be due to the ignorance of copyists. "Uridg. w war in der historischen Zeit vielfach erhalten. Es wurde mit dem Zeichen *F* (digamma) zuweilen ungenau auch mit υ und β dargestellt" (Brugmann 1906:para. 332).

In Italic, loss of IE $*w$ occurs before *o* as in $*dei\text{wos} > \text{Lat. } deos$; initially before *r*, $*wr\acute{a}dix > \text{Lat. } r\acute{a}dix$, $*wr\acute{e}p\omicron > \text{Lat. } r\acute{e}p\omicron$ 'I creep'. Latin *w* had substantially the value of English *w* "but in the early centuries A.D. it came to be pronounced with more friction, first as a bilabial fricative like Spanish *b*, then as a labiodental fricative like English *v*. Intervocalic *b* also became a fricative. Hence the frequent confusion of spelling between *v* and *b* in late inscriptions and in manuscripts (Buck

1933:136).

5. The ritual of marking with a plow the site chosen for the foundation of a town is found in Greek, Roman, and Scandinavian mythology. Ovid (*Metamorphoses* 4.562-602) reported that Cadmus founded Boeotian Thebes with the ritual of a plow. Virgil (*Aeneas* 1.590-95) recounted how Dido delimited a large area with strips of an ox-hide. Snorri (Young 1971:29) told about the birth of Zealand in the following manner: Gefjon was awarded as much land as she could plow in one day and one night. Gefjon took four oxen and yoked them to a plow. They plowed so hard and so deeply that they loosened the land and drew it into the sea.

6. *ueruo < *uoruo (ue- < uo- before r, s, t) is a sound change that occurred during the second century B.C. (Sommer 1902:81-82) (cf. *uertō* < *uortō*). An o-grade noun is found in Latin: *ueru-um* nt. 'spit, spiked railing'. Moreover, Osc. *uruvú* points to a zero-grade for Lat. *uruum* 'curve of the plow'.

7. Ab eo colonis locus com(m)unis qui prope oppidum relinquitur territorium, quod maxime teritur....Hinc fines agrorum termini, quod eae partes propter limitare iter maxime teruntur;...etiam ambitus (i)ter, quod circumeundo teritur: nam ambitus circuitus; ab eoque Duodecim Tabularum interpretes "ambitus parietis" circuitum esse describunt.

From this, the place left near a town as common property for the farmers, is called the territory, because it "is trodden" most. ...From this the boundaries of the fields are called *termini*, because those parts "are trodden" most, on account of the boundary-lane. ...Moreover an (*ambitus*) "edge-road" is a (*iter*) "way", because it (*teritur*) "is worn" by the going around: because an edge-road is a circuit; also this the interpreters of the Twelve Tables define the *ambitus* of the wall as its circuit (*De lingua Latina* 5.21-22).

In the Loeb rendition the manuscript's evidence for *teri-* (as against *terri-*) is worthy of note.

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A CAMEL OR A CABLE THROUGH A NEEDLE'S EYE?

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Few sayings from the Gospels are better known than this one: "It is easier for a camel to go through the eye of a needle than for a rich man to enter into the kingdom of God" (Matt. 19:24, Mark 10:25, Luke 18:25).¹ Jesus went on to say that while it is humanly (παρὰ ἀνθρώποις) impossible, for God anything is possible. For my strictly linguistic purpose I will focus upon one word in this paradigm of the impossible, κάμηλον in Greek. The syntax of the Greek sentence puts the noun into the accusative case, but there is a long-standing convention of grammar to cite it in the nominative form κάμηλος.

Not nearly so familiar in the Occident is Muḥammad's use of the same paradigm in a rather similar context, though not directed against the rich: "To those who deny and scorn our messages the gates of heaven shall not be opened, nor shall they enter paradise until the camel passes through the needle's eye" (7.40[38]). الجمل {(?)|-jamalu} means 'the camel' in the vast majority of occurrences; but in this passage the Arabic commentators have disputed the meaning, and certain influential ones have maintained that it is a kind of rope. Some of the latter argue that the meaning 'rope' is associated with several other vocalizations of the three consonants {j-m-l}, not just this one; that all the vocalizations were current within Muḥammad's own circle; and even that one of his companions, Ibn 'Abbās, pronounced the word in this verse {(?)|-jummalu} -- i.e. 'thick rope' or 'twisted cable'. At a later time in the Muslim tradition, although such philology was not utterly rejected, it became unorthodox to acknowledge that more than one vocalization of any word in the consonantal text had ever been legitimate.² The narrowing of outlook had the effect of insisting exclusively upon الجمل in this verse; but it still left open more than one interpretation, and orthodox Muslims, down to the present, are divided on whether to understand 'the camel' or 'the rope'.

Among the Christian commentators upon the Gospels, very few had an inkling of any meaning other than 'camel'; and only Cyril of Alexandria (c. 370-444), who was very well informed, rejected the meaning 'camel' outright: "Here he says κάμηλον, not the beast of burden but the thick rope with which sailors tie their anchors; so he puts the thing next door to the impossible." His learned predecessor Origen (about two centuries earlier) preferred τὸ ζῷον 'the animal', but mentioned that some interpreted it as 'the rope for hoisting'.³ So the evidence for the homophony or polysemy of the word in Greek is a little thinner than in Arabic,

and not contemporary with the Gospels, but still firm enough. Furthermore the Armenian translation of Matthew 19:24, made from the Greek or the Syriac no later than the fifth century, and the Georgian translation of Mark 10:25 are reported to have a word that means 'rope'.⁴

Origen and Cyril plainly knew the meaning 'cable' for κάμηλος, although they may never have read any text besides the Gospels where it was applicable. The modern scholars who have searched our extant corpus of ancient Greek -- over sixty million words -- have not turned up one other instance of κάμηλος in the sense of 'cable'. But that corpus, for all its size, is no cross-section of the language; the vocabulary of sailors is surely under-represented.

A scholium (or marginal note) on πρωκτὸν δὲ καμήλου 'a camel's arse' in the medieval manuscripts of Aristophanes' comedy, *Wasps* (1035), explains that the camel (ἡ κάμηλος) has a hot arse and is lecherous; but then it adds the information κάμιλος δὲ τὸ παχὺ σχοινίον διὰ τοῦ τ 'κάμιλος, thick rope, spelled with ι'.⁵ Such nuggets of Byzantine learning go back, on the whole, to some earlier authority; but unless the scholium identifies the authority, there is no telling how early it was. For our present inquiry we are left in doubt whether the spelling κάμιλος, with ι, for 'thick rope' or 'cable' belonged to a time when that vowel was ordinarily kept distinct in pronunciation from η. To our medieval informants it was purely a matter of orthography; the letter η had long since settled down to the same pronunciation [i] as the other letter ι, but in spelling they tried to adhere to the ancient norm.

The first tendency toward merger, pronouncing [i] instead of [ε:], is discernible in a few Attic inscriptions from even as early as 600 B.C.; e.g. the god's name ΗΕΡΜΙΣ in the local Attic alphabet (ΕΡΜΗΕ after the Athenians adopted the Ionic alphabet).⁶ But in the later centuries of the pre-Christian era, such anomalous spellings become less, not more frequent, probably because the schools thrive and effectively inculcated a high level of uniformity in spelling, perhaps in pronunciation too.⁷ Only during the Christian era did the tendency toward radical simplification of the complex vowel-system gradually overwhelm the whole Greek population. When Origen wrote in the third century, his transcription of the Hebrew Bible into Greek letters evinces a lingering distinction between the two vowel-letters η and ι: the former, if no longer [ε:], was still [e:], not [i].⁸ This fact may bear upon his exegesis of Matthew 19:24: he does not mention a difference in spelling or sound between the word for 'camel' and the word for 'cable'; but in that context he was not bound to, especially if pronunciation was in flux and he hardly ever saw the word for 'cable' written in a book.

A few medieval Bible manuscripts have κάμιλον (with ι) in one or another of the three Gospels. Moreover no manuscript is reported to have the ι in the other Gospel passages where the reference is unmistakably to a camel, not a cable (Mark 1:6, Matt. 3:4, 23:24). This argues that those few scribes who wrote κάμι-

λόν (with υ) in the saying about a rich man entering into the kingdom of God, probably understood the word to mean 'cable', like the scholium on Aristophanes. But I have not collated the manuscripts myself, so as to form an opinion of their standards of orthography.

Certainly Christendom as a whole, almost from the first, has understood Jesus to say "It is easier for a camel to go through the eye of a needle. . . ." But beyond that the immediate task of philology is to determine, if possible, whether that was indeed the original meaning of the text. Here we run into the complication that the Gospels are in Greek -- the versions in other languages all go back to the Greek directly or indirectly -- but modern scholars believe Jesus preached in Aramaic. There is no specific evidence to prove this point. Since both languages were widely used by the Jews as well as the Gentiles of the region, I think it likely that Jesus on various occasions spoke either language. But Aramaic in that period was written much less; so our information about its vocabulary is spotty, to put it mildly. In later Aramaic (usually called Syriac by Occidental scholars) {gamlo?} can have either meaning, as stated by George M. Lamsa in a footnote to his Bible translation from Syriac into English; he chose to render Matthew 19:24 "It is easier for a rope. . . ." This adds a little to the likelihood that in the polyglot environment of Jesus the word for 'camel' in Greek too was polysemous and meant 'cable' or had a homophone or near-homophone with that meaning, whereas only the meaning 'camel' was generally known in monoglot Greek areas.

So we return to the question of the original sense of the word in Jesus' saying. Now, instead of weighing the authority of Cyril of Alexandria in favor of 'cable' and the multitude of commentators on the other side, we look into the intrinsic probability, which interpretation makes more sense. The same line of argument will apply to both the Gospel and the Qurʿān; and Ibn ʿAbbās, that companion of Muhammad, has anticipated me, except that to him God was the author of the words preached by Muhammad. Ibn ʿAbbās reasoned as follows: "God could not have coined so inappropriate a metaphor as 'a camel passing through a needle's eye' -- meaning that there is no relationship whatsoever between a camel and a needle's eye whereas, on the other hand, there is a definite relationship between the latter and a rope (which, after all, is but an extremely thick thread)."¹⁰

For my part the theology of how a sacred text was composed is beside the point; but otherwise I go along with Ibn ʿAbbās. As has happened so often in controversies more momentous than this one, he gives God the credit for what I would attribute to nature. In this paradigm a natural sort of rhetoric requires what is like a thread, except for being way too big. In the Gospel saying, a rich man is [to a poor man] as a cable [to a thread]; for rich people in general were fat, and must have had trouble slipping through a narrow passage in everyday life -- let alone the mysterious entrance to God's kingdom.¹¹ Classical Greek writers refer to the rich as fat (e.g. Herodotus 5.30.1, 77.2, 6.91.1; Aristopha-

nes, *Peace* 639, *Knights* 1139, *Wasps* 287). For in a world where food was seldom plentiful, those who had the instinct to eat heartily whenever possible had a better chance of surviving on their modest reserve of fat in time of scarcity or famine; but the few whose ample means put them beyond any such risk were still in the grip of the same appetite and kept putting on weight.

When I maintain, in agreement with Ibn 'Abbās, that 'cable' makes better sense intrinsically, this amounts to a claim that it was so intended by the originator of the paradigm, Jesus or an unknown source before him -- the ultimate source at that, rather than an immediate source or sources. My personal feeling, with no specific documentation to back it up, is that before him the paradigm had been used in practical circumstances; for instance, "It is easier for a cable to go through a needle's eye than for you to get that big cupboard through this door" or "for anyone to stuff a wide jug into such a small sack" -- or else in morally hopeless situations: "It is easier for a cable to go through a needle's eye than for gossips to keep a secret" or "for a drunkard to quit drinking." To apply the paradigm to something eschatological or apocalyptic, "for a rich man to enter into the kingdom of God," was brilliant, and all the more so because this adaptation of it keeps the down-to-earth image of an overfed rich man squeezing in vain to get inside. We have an indication that the Gospel writers shared this sense of earthiness; for whereas Matthew otherwise has "the kingdom of heaven" instead of "the kingdom of God" in Mark and Luke, here for once all three have "the kingdom of God" -- to mention "heaven" would have blurred the picture.¹²

The meaning of κἀμῆλον in this saying is substantially unaffected by the concern of much New Testament scholarship to distinguish between the authentic sayings of Jesus recorded in the Gospels and those loosely or mistakenly attributed to him there. Apart from my opinion that there is no reliable criterion for putting a given saying into one category or the other, as linguists we are really asking what the author of this saying, whoever it was, meant by κἀμῆλον, or by the Aramaic word behind it. That question would remain the same even if the author were not Jesus. Granted that 'cable' makes the best sense in the paradigm proper, conceivably that meaning could already have been lost when the paradigm was applied to the kingdom of God. But that is improbable; and if it did happen, the meaning 'cable' was ingeniously recovered by some exegetes known to Origen.

Yet this meaning was always easy to lose for those who did not encounter it in daily life but only in the Gospel text. For κἀμῆλον could readily be taken for 'camel', the largest familiar beast -- and the clumsiest -- confronted with the tiniest opening. Some recent scholars, even when faced with the choice between 'camel' and 'cable', prefer 'camel' as Origen did;¹³ they associate such hyperbole with the style of Jesus in the Gospels -- above all where he says, "Blind guides, which strain at a gnat and swallow a camel" (Matt. 23:24). They do not know, or at any rate do not heed, the argument of Ibn 'Abbās against the partisans of 'the camel' in the Qur'ān passage: that the camel and the needle's eye

have inherently nothing to do with each other -- whereas the camel and the gnat are natural opposites, one being the largest animal in ordinary experience and the other the smallest.

In etymological research the ideal is to prove conclusively whether a case like this one in Greek was originally homophony or polysemy; i.e. whether two unrelated words merely coincided in sound or a single word developed a divergence of meaning so great that the original link was forgotten. But often the solution eludes us, as it does here. The origin of the meaning 'rope' or 'cable' is utterly obscure; in the undetermined language of origin it may have been derived from the meaning 'camel', either because the rope was made at first from camel's hair or because its motion was somehow reminiscent of a camel. In any Semitic language, under the prevailing theory of Semitic grammatical structure, any pair of words that share the same three consonants are presumed to be related semantically; but there are many exceptions, some of them well known. Especially when the three consonants do not make up a verbal root, the semantic relation between a pair of nouns is liable to be muddy; and that is one difficulty of our present problem.¹⁴ The single tolerably certain point is that in a Semitic language the meaning 'camel' must be older than 'cable', because camels were creatures of nature in that region, too conspicuous to be overlooked in the wild and domesticated before the invention of any sort of artificial rope.

κάμηλος as the Greek word for 'camel' must have been derived from a language of Asia or Africa, as the beast was not native to Greece.¹⁵ Because of its prominent association with transport by land, a Semitic source is more likely than any African. But we are in no position to specify which language, since the Greek vowels -ἀ-η- do not closely match any of the recorded Semitic vocalizations.

Although I maintain that in the paradigm of the impossible the meaning 'cable' is primary and 'camel' secondary, the latter undeniably captured the imagination. It was even improved upon in the Talmud, where two Aramaic passages speak of "an elephant that goes through a needle's eye" (ברכות 55b, bottom) and of the quibblers from the academy at Pumbeditha on the Euphrates "who push an elephant through a needle's eye" (בבא מציעא 38b). The elephant, the largest by far of all land animals, was of course an exotic curiosity, more unwieldy even than a camel.

Whereas any predecessor of Jesus in the development of the paradigm is quite unidentifiable, Muhammad has been supposed by some Christians to have picked it up from the Gospel, indirectly if not directly. Religious ideology (not to say bias) has motivated most of those who have either asserted or rejected Muhammad's dependence on a Christian source. There is, naturally, no documentation to show who else might have suggested it to him. The New Testament was not yet translated into Arabic; but he may well have been exposed to an Aramaic version, and as a traveling merchant he is likely to have acquired some knowledge of that language with no more difficulty than a French trader learning Italian, or vice versa. Or even if he remained utterly monoglot,

still he was doubtless in touch with Christian Arabs, some of whom knew this saying of Jesus by heart. Much else in the Qurʾān could only have come from the canonical Gospels or some aberrant Christian literature, directly or indirectly; but the paradigm of the impassable needle's eye might conceivably have reached him through non-Christian folklore of some kind.

At any rate, the disagreement among the early Muslim authorities as to 'cable' or 'camel' is a striking reproduction, if not a continuation, of the same dispute among certain Christians. The strength of the partisans of 'cable' in the exegesis of the Arabic text reflects favorably upon 'cable' in the Greek also, because of the probability that wherever a Semitic language was current to reinforce it, the appropriateness of the meaning 'cable' remained clear. But elsewhere the fantastic interpretation 'camel' proved too attractive and prevailed. It makes the message grimmer; for whereas conceivably a cable could be unraveled by enormous human effort -- however pointless -- till it became thin as a thread, only a miracle from God could so overcome the size and shape of a camel -- even grinding it up very small would be to no avail.

Through an aberration of scholarship, a few respected Hellenists have gone so far as to call κáμιλος 'cable' a "Byzantine invention"¹⁶ or a "later artificial rationalization",¹⁷ overlooking if not purposely ignoring the contrary evidence from as early as Origen in the third century. Their motive, so far as any can be discerned, was to discredit the very existence or possibility of an alternative to the interpretation of the crucial word as 'camel' in the Gospels. While no article of the Christian faith is at stake, philologists can still be as prejudiced and dogmatic as any theologian.

If further proof were needed that there really was a Greek word meaning 'cable' and pronounced [kámilos], at least after the merger of the vowel sound [e:] with [i], that proof comes from the Romance derivative, *chable* in Old French, *cable* in the coastal dialects that did not share in the change [ka] to [ča], characteristic of the Île de France. It is no wonder the coastal form *cable*, in the daily vocabulary of seafarers, crowded out *chable* eventually, and spread to English. The etymology κáμιλος > *cable* was proposed over sixty years ago by Paul Haupt. Unfortunately a mere abstract of his paper for the Johns Hopkins University Philological Association was published.¹⁸ He put his finger on the semantic weakness in the generally accepted derivation of *cable* from the late Latin *capulum*, though it is unassailable phonetically. This word is first attested in Isidore of Seville's *Etymologies* (20.16.5): *capulum funis a capiēdo, quod eo indomita iumenta comprehenduntur* 'noose of rope, from *capio*, *capere* (take), because untamed beasts are caught with it'.¹⁹ Haupt objected properly, "But a cable is not a lasso or lariat."

At the most *capulum* > *cable* may have influenced the phonetic form that the Greek [kámilos] took on in Romance; for otherwise it might have been expected to become *[kámbelə].²⁰ Beyond question another late Latin word *catabola* in the sense of 'catapult', from the Greek καταβολή, did come down to *chaable* in Old French,

cable in the Song of Roland; and this word with double *-aa-* took on also the meaning 'cable'.²¹ The minimal phonetic difference between *-aa-* and *-a-* was bound to be unstable and made the confusion inevitable. For in any vernacular language of medieval Europe the spelling, even if it captured the sounds accurately, had too little influence to bring about a standardized, unchanging pronunciation.²²

Finally, in quite recent times, cable made of metal has spread far beyond the nautical realm and nearly reversed the state of things as it was in the ancient Greek vocabulary. For us the everyday word is *cable*; *camel*, though still familiar, belongs to a limited sphere of books and the zoo. Also, as a brand-name of cigarettes, now that fewer people smoke, the word is on the decline in North America -- which is not at all regrettable. But we may well lament that the animal itself, in its old habitat, is losing out to mechanical vehicles. It seems destined, like the horse in industrialized countries, to be preserved mainly for the sport of racing.²³

NOTES

1. Minor differences in wording between the Gospels do not affect the translation, beyond the irrelevant variation in the King James version: "the eye of a needle" (Matthew, Mark) / "a needle's eye" (Luke).

2. See Arthur Jeffery (ed.), *Materials for the History of the Text of the Qurʾān: The Old Codices* (Leiden: E. J. Brill, 1937), pp. ix, 43.

3. Both patristic writers discuss the word in their commentaries, fragmentarily preserved, on Matthew. Fortunately, what they had to say about 19:24 survived.

4. I cannot vouch for it from my own knowledge. The Georgian, according to some, is based on the Armenian, and so would carry less weight.

5. An abridged gloss *κάμιλος δὲ τὸ παχὺ σχοινίου* was included in the Byzantine lexicon picturesquely entitled *ἡ Σοῦδα* 'the palisade' (and later, through a misunderstanding, attributed to a non-existent scholar Suidas).

This entry in Liddell-Scott-Jones, *A Greek-English Lexicon* (Oxford: Clarendon Press, 1940), on the whole the most reliable treatment of the ancient Greek vocabulary, is far below the standard: "*κάμιλος*, ὁ, *rope*, Sch.Ar.V.1030[sic], Suid. (Perh. coined as an emendation of the phrase εὐκοπώτερόν ἐστι κάμηλον διὰ τρυπήματος ῥαφίδος διελθεῖν ἢ πλούσιον εἰς τὴν βασιλείαν τοῦ θεοῦ εἰσελθεῖν *Ev.Matt.19.24*: but cf. Arab. *jummal* 'ship's cable'.)" Not only is the macron in *κάμιλος* unjustified, coming probably from a misinterpretation of the Greek scribal convention of marking with a horizontal line any letter or part of a word cited separately for grammatical purposes; see my article, "The Greek Diacritical Marks," *General Linguistics*, 24 (1984), 23. Moreover the argument against the authenticity of a Greek word meaning 'rope' or 'cable' is absurd and ignores the

crucial passages in Origen and Cyril. By a fatal restriction this 9th edition excludes all Christian literature after the New Testament, though written in the same Greek language as the pagan literature that the *Lexicon* covers from the same periods. G. W. H. Lampe, *A Patristic Greek Lexicon* (Oxford: Clarendon Press, 1961), makes this good and cites those two passages.

6. Sven-Tage Teodorsson, *The Phonemic System of the Attic Dialect 400-340 B.C.* (Studia Graeca et Latina Gothoburgensia XXXII [1942]), pp. 90, 184-186. While valuing his research, I would dispute many of his conclusions.

7. Teodorsson, *The Phonology of Attic in the Hellenistic Period* (Studia Graeca et Latina Gothoburgensia XL [1978]), pp. 28, 67-68.

8. A few in recent times have questioned whether Origen himself really deserved the credit for transliterating the entire Biblical corpus. But we have no basis for positing someone else with the knowledge and the fabulous energy to carry it out. To learn Hebrew, Origen must of course have had a Jewish teacher or teachers, and the transcription (now extant only in fragments of the Psalter) reflects their pronunciation of Hebrew.

9. For this reference I am indebted to Dr. Edward Odisho of Loyola University, through Prof. J. P. Maher (who has helped me with many other particulars). The title of Lamsa's work, *The New Testament Translated from the Original Aramaic Sources*, expresses a flattering but ill-founded notion which the recent scholars of Aramaic nationality seem unable to surmount, that their Gospels are not a translation from Greek but preserve an independent text earlier than the Greek.

10. I depend on the English paraphrase by a recent Muslim scholar, Muhammad Asad (Gibraltar: Dar al-Andalus [1980]), p. 209. My Arabic is too weak for me to look up his sources myself. So I cannot verify my surmise that Ibn 'Abbās preferred to read الجمل {(?)-jummaḷu} because this vocalization unambiguously rules out 'the camel'.

11. According to a notion that goes at least as far back as the medieval Latin *Catena aurea* compiled by Thomas Aquinas, and is repeated by quite a few recent commentators on the Gospels, Jerusalem had one small gate named (or nicknamed) "needle's eye", which was an especially tight squeeze for a camel.

12. Matthew has "the kingdom of God" also in 12:28, 21:31, 43, but "the kingdom of heaven" 33 times.

13. E.g. Walter Bauer, *A Greek-English Lexicon of the New Testament and Other Early Christian Literature*, tr. and adapted by William F. Arndt and F. Wilbur Gingrich (University of Chicago Press [1955]).

14. There is indeed a Semitic verbal root {G-m-l} that means 'repay' (among other things); but neither meaning of the noun, 'camel' nor 'cable', is perceptibly related to it.

15. See Emilia Masson, *Recherches sur les plus anciens emprunts sémitiques en grec* (Paris: C. Klincksieck, 1967), pp. 66-67.

16. J. P. Moulton and W. F. Howard, *A Grammar of New Testament Greek*, II (Edinburgh: T. & T. Clark, 1920), 72.

17. F. Blass and A. Debrunner, *A Greek Grammar of the New Testament and Other Early Christian Literature*, tr. and rev. by Robert W. Funk (University of Chicago Press [1961]), p. 14.

18. "Philological and Archeological Studies," *American Journal of Philology*, 45 (1924), 238-241.

19. Although this is from the seventh century, the verb of the "first conjugation" *capulantur* 'they are lassoed' (Columella 6.2.4; 1st century) is formed from a noun *capul-* with this meaning.

20. Another proposed etymology, which is semantically unexceptionable, is the Arabic {hbl} 'rope'; Karl Lokotsch, *Etymologisches Wörterbuch der europäischen (germanischen, romanischen und slavischen) Wörter orientalischen Ursprungs* (Heidelberg: Carl Winter, 1927), p. 60. But the Arabic pharyngeal {h} would not normally become [k] in any Romance language (or [č] in Old French).

Classical Latin borrowed *καμηλος* 'camel' early enough for the Latin rule of accent to prevail: *camēlus*; see my review of Ernst Pulgram, *Latin-Romance Phonology: Prosodies and Metrics*, *Forum Linguisticum*, 2 (1978), 270-272. The French *chameau* does not, however, reflect *-ēl-* but *-ēll-*, which is a by-form in classical Latin. The alternative, OF *chameil*, later *chamoil*, from *camēl-*, has died out.

21. Walther v. Wartburg, *Französisches etymologisches Wörterbuch*, II (Leipzig: B. G. Teubner, 1940), 333-334, 483-485.

22. After *cable* was established in French and Spanish, another word for 'cable' -- *gόμενα* -- appeared in Italian and spread through the Mediterranean; Henry and Renée Kahane and Andreas Tietze, *The Lingua Franca of the Levant: Turkish Nautical Terms of Italian and Greek Origin* (Urbana: University of Illinois Press, 1958), pp. 252-253. Its source is supposed to be the Arabic {juml}, perhaps in the accusative case {(?)|-jumla}. To account for the [g-] in Italian, the word must have come from Egypt, where this plosive is pronounced instead of the normal Arabic affricate [j].

23. A number of improvements in this paper are due to members of the Faculty Translators Seminar, of the National Resource Center for Translation and Interpretation at SUNY-Binghamton, where I read the handwritten draft on July 8, 1987.

When the paper was read at the LACUS Forum on August 6, Patrick Duffley made the worthwhile suggestion of an alternative route from the meaning 'camel' to 'cable', via the rope for tethering the animal. Also, by a happy coincidence, Sheila Embleton had seen a recent article by Jes. P. Asmussen, "'Kamel' -- 'Nadelöhr': Matth. 19:24, Mark. 10:25, Luk. 18:25", in *Studia grammatica Iranica: Festschrift für Helmut Humbach* (ed. by R. Schmitt and P. O. Skjaervø; München: R. Kitzinger, 1986), pp. 1-9, while my abstract was fresh in her mind; and on August 6 she kindly brought that article to my attention, along with a trenchant remark that Asmussen and I drew opposite conclusions from essentially the same data. The difference is due, above all, to his unawareness of the argument which Ibn 'Abbās propounded simply but cogently; Asmussen relies instead upon modern commentators who are dead-sure that *καμηλον* in the Gospel saying must have meant

nothing but 'camel', and that 'cable' was just a misunderstanding. The texts that he cites are all pertinent; but from them he makes tendentious, illogical inferences to minimize or brush aside every bit of documentary evidence in favor of 'cable', besides the intrinsic likelihood.

THE 'EYE' OF THE NEEDLE
IN PREHISTORIC RELIGION AND MEDICINE
WÖRTER UND SACHEN

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The "eye of the needle" in texts of Islam and Christianity symbolizes a passage too tight to get through. But the needle's hole is not an "eye" in every language. For that matter, even when a needle's hole is termed its "eye", imagination can find analogies between still other orifices. A case in point is our calling the eye an orifice, from the Latin for 'making a "mouth"'. A young mother one day observed her little daughter replicate this metaphor by combining memories of medical examination and threading the needle. The mother overheard the child telling the needle to "say 'aah'".

The needle's hole is its "handle" in German *Öse* (cognate of Latin *ANSA* 'handle'). In South German dialects the needle's eye is called its "ear", *Nadelöhr*; this in turn is often folk-etymologized as 'ear [as of grain]' because of the homonymy of the dialect words equivalent to standard German *Ahre* and *-öhr*. The needle's "ear" is also what Russian has, *uško*, just as Serbo-Croatian *ušica* (derivative of *uho* 'ear'); the perforation of the ax-head receives the same name.

The "needle's eye" in Aramaic is literally the "needle's hole", but, leading in the same direction as the Romance and Greek terms are two words in Aramaic meaning 'hole': *bizza* and *nigba*. The latter also means 'woman' or 'female'. The word for 'female' has the same etymology as that for 'hole' except having a so-called aspirated, or approximated consonant. (Personal communication from Edward Odisho.)

But, although the synoptic evangelists all three render Jesus' metaphor of the needle's "eye" with the seemingly neutral word 'perforation', FORAMEN ACVS in Latin and in Greek trupaliá or trupema rhapídos, there is striking evidence from Romance languages and from modern Greek of a more colorful turn of phrase. It is however such an expression as scribes of ascetic faiths might have wanted to avoid: the collective evidence from Spanish, Romontsch and Modern Greek is that there was an ancient Latin and Greek usage of calling the needle's opening its "arse". The linguistic data have archeological "cognates".

Spanish calls the needle's "eye" not only *el ojo*, but also *el culo de la aguja*; in Romontsch too a needle's "eye" is *el tgil d'ina guila*. So it is in modern Greek, too: *o kólos* (cf. anatomical colon). --The apparent similarity of the Greek and Romance terms, however, does not mean that these terms are cognate. The former is from Indo-European **kwel-* 'to turn', referring to the hip joint primarily, thence to adjacent regions. There is as yet no convincing etymology for Latin *CVLVS*, though it is underivable from the same root as the Greek word. The similarities involved do not amount to regular phonetic correspondence. (Pre-Latin **kus-lo-s*, from Semitic **ku*'s 'cup, vessel, vulva', with IE suffix, might be considered.)

The Romance terms suggest that Latin *CVLVS* 'arse' was used in Iberia and Raetia not only literally in the anatomical sense, but also in a metaphor for the needle's "eye".

The precise translation of these words depends on metonymy or synecdoche: there are shifts of figure and ground in varying directions and extensions from arse to hip to buttock or any more precise facet of passing interest. Given the clash of English homonyms here, we will speak of *pars pro toto* and *totum pro parte* in order to avoid incurring the wrath of bigots or embarrassing the shy or immature.

There is no such thing as "culture-free vocabulary", pace the glottochronologists. The fate of (intended) euphemisms is to provoke repercussions on neutral terms: in the USA venerable old ass and cock have been replaced by rooster, breast and thigh (of poultry) by white meat and dark meat etc. Commensurately, in dialects where Spanish *ojo* conjures up the offensive sense of *culo*, it is

necessary to refer to the orbs as *la vista*, the 'seeing'. In addition, *ojete*, the diminutive of *ojo*, also poses problems for the concept of "culture-free" vocabulary, since it can refer to a button-hole or to the anus. Parallel to this in Black homosexual slang is round-eye for the latter, as opposed to the ogival "eye", which is female. The "neutral" word *ojo* 'eye' is now tabu in some Spanish dialects as it is synonymous in regard to the needle's "eye" with *culo* (See relevant discussion in Wright 1984). Cf. the ribald classic of Juan Lamas *Gracias y Desgracias del Ojo del Culo* (edited 1977 by Alonso.)

"Threading the needle," is an ancient domestic chore that occurs to folk of many cultures as a metaphor of the procreative act. In a Black English erotic poem a woman praises her lover: "he ... threads my needle..." (Dillard 1977:42). Brendan Behan, in *Borstal Boy*, writes: "...and Shiela will be sorry she did not let me thread her the night we walked the canal" (1961:13). --Here Gaelic substratum in Hiberno-English phonology is a further complication, for there is a loss of the English distinction of initial /tr-/ and /thr-/ in thread and tread (or trash-thrash, trill-thrill etc.). Thanks to phonetic syncretism, cocks treading hens intersects with threading the needle.

The metaphor of *ojo* and *culo* is also attested by anthropological jokes: cf. the matter of slanted "eyes" in the Orient vs. "round eyes" in the Occident, not to speak of the above usage in Afro-English.

"Threading the needle" is the vehicle of an Italian metaphor that translates the English mechanical terms plugging in (cf. male-female plugs) and insertion. That word is *infilare*, from *filo* 'thread'. (Ditto French *enfiler* and *fi*). --In this lexical field the *culo*/*tgil*/*kōlos* of the needle is complementary to "threading" as the verb for copulation, *infilare*, *enfiler*.

Now, though blue-noses will sniff at all this, it is precisely and only such a view of things that illuminates, and with some certainty, the sacred symbolic values of thousands of prehistoric objects from dirt archeology. Although the uninformed might characterize my focus here as secular, irreligious, scandalous, or even base, the matter is of utmost importance to the historian and prehistorian, not only of medicine, but also of religion.

Lexicographical study in general would be a powerful adjunct to the archeologists' redoubtable armory of tools, such as C-14 dating, dendrochronology, stratigraphy, palynology, typology, geographic distribution, and photography of various sorts. These marvels of modern technology and mathematics are fine and dandy in their own right, but limited to them archeologists become mere technicians. This is not just my biased opinion: I have heard the lament directly from an eminent archeologist in his own photo lab.

Interpretation of prehistoric objects and images in the lexicographic context removes the subjectivity of reading them as Rorschach blots, tokens without contexts, since the words provide the authentic context of use of things. And in given cases the very words have remained in use for ages while the things they refer to go out of use and are lost or replaced by newer technologies. Though neither group is sufficiently aware of it, both the archeologist and the linguist working on inherited morphological and syntactic matter are dependent on the material of the other for correct interpretations in linguistics and archeology.

In turn, linguists seem little aware of the relevance of a subtle relation between literacy and pictorial art: literate artisans consider it an occasional joke to incorporate the rebus principle in their works: only the greeting card industry, advertisers, the comic strip artist, and so on cultivate the art. And the underlying principle of their art is something verbal, the pun. This is only a part of the story. The other is that for preliterate societies the only recording device for verbal messages is pictography. Thus much of the visual "art" that in prehistory was intended as verbal record has been taken, or mistaken, for purely non-verbal picture making.

As there can be no Scripture without Script, there can also be neither writing nor iconography without the rebus principle, as we know from the evolution of writing. Among preliterate craftsmen the urge to create images is permeated by verbal reflections. Pictography surfaces in the objects and icons shaped by prehistoric, preliterate hands. An object, and its image no less, evokes as an automatic, involuntary reflex the name of that object in the viewer's language(s).

The objects here in question are needles and pins. Not to be overlooked is that in the taxonomy of some

languages 'pin' and 'needle' are covered by a single word, as e.g. German *Nadel*. Archeologists dealing with ancient pins, needles, brooches, and the like must accordingly investigate the particular lexicon for needles, sewing, and for threading the needle. This we have already done here, and, having looked at the words, let us now consider the things.

Needles and pins belong to the class of fasteners. Fasteners secure garments. They can be decorative and are usually quite open to view. Be they buttons, toggles, clasps, pins, knots, or belts, they catch the eye, just the thing for apotropaic medicine. This is a weighty consideration for peoples who live with superstitious beliefs about danger that bears in on us from outside, especially dangers that are believed to emanate from the gaze of persons, malicious or even admiring. This has been elaborated into that belief system known as "the evil eye, *malocchio*, *der böse Blick*" etc. Identical would be the source of the Latin term *INVIDIA*, which is misleadingly translated as 'envy'; as opposed to this eroded form, the Latin *INVIDIA* was palpably a motivated derivative of *VIDERE* 'to see, look on'.

The baleful, evil eye then is arrested by prayer from the Kur'an among Muslims or the *mano cornuta* in Italy, but also by ornaments worn concealed or openly.

The form of fasteners can be marvelous, beautifully or horribly. Athena wears on her aegis the sundered head of Gorgo, just as headhunting peoples from Fiji to the Amazon to Iron Age Ireland. The material of these fasteners, even to our eyes, is often a precious substance, e.g. antler, jet, coral, amber, gold or ivory. A couple of Middle English texts attest the costliness of material and the potent symbolism of the fastener:

hire gurdel of bete gold is al... the
bocle is al of whalles bon 'her girdle
is all of beaten gold... the buckle is
all of whale's bone' (from the poem
Most i ryden, 1325). Compare:

Thet chastete ssel bi straytliche
y-loked ... be abstinence ... thet
is the bocle of the gerdle'

(*Ayenbite of Inwit*; cited in the Merriam-Webster Book of Word Histories.)

Let us not forget Aphrodite's belt, ZONH. And Athena's aegis, as we have mentioned above, features a gorgon's head; the same Gorgon, depicted before decapitation, frequently involves the ritual of genital display. Such trappings are too often taken as mere attributes, without a thought to the symbolic function they invested in the given culture.

Fins and buckles have been believed by hosts of cultures to be endowed with magical, hygienic, and apotropaic powers. They are not mere props or decorations as with us. Any person permitted access to one's fasteners is on privileged terms with the owner, is parent, child, nurse, friend, lover, or, less welcome, one's owner and master. Archeologists would be well-advised to study such ethnographic aspects of fasteners, not just assay the metal, count, measure and label the pieces as "status symbols".

The Wörter und Sachen both lead us directly to one of the most powerful beliefs in folk medicine and in testaments far older than books, "revealed" or otherwise. -- In fact, Old Testament and Kur'an, both incorporate beliefs about the "evil eye" that antedate by far the age of Abraham or the particular revelations claimed by the prophets.

The Bronze Age fasteners that are the focus of this study are adorned with the same motif as found in the earliest images wrought by human hand. Older than the mammoths and woolly rhinos of Altamira and Lascaux, are the "Venuses" of Aurignac. They glorify woman's generative power, the source of life as it was known before "Revelation". Display of this force lives on in deed and word and image to our own day, where it has not been suppressed. We find such display in ritual gestures of torso or of the hand raised in solemn oath-taking and anarchic protest; these are rites that invoke divine power and affirm one's truthfulness; they defy the threat of strangers, sickness, ill luck, and other dangers. (See the classic study by Fraser 1966.)

The same message can be transmitted by or translated into media other than words, i. e. bodily display, or pictures and carvings pure and simple. The sheela-na-gigs of Ireland, England, and the continent represent the same tradition as the Greek Gorgo, mentioned above. Even a workaday tool in the hands of

an artisan with a surrealist, punning bent can become the vehicle of our messages: the rebus principle combines words and things, as for example in the jocular memo form whose shape is dictated by our term foot-note.

Prehistoric, preliterate, artisans of the Bronze and Iron Ages played the same game 3000 and 4000 years ago. They have left us needles whose embellishment we can now, in light of lexical evidence, interpret with some certainty as images of woman's inguinal area.

Pins, needles, fasteners, brooches are decorative, but they are not only decorative. Nor are they only utilitarian. In certain belief systems, clothing fasteners, like apotropaic emblems on the doorpost, are, we have noted, the first line of defense against dreaded evils. The variety of such symbolic fasteners and amulets ranges from the blue eye (to mati) made of glass worn in Greece and the Arab world to the swastika, the sun, cross (Christian and pre-Christian), Solomon's Knot, the Hebrew yad 'hand [amulet]', the Arab 'hand of Fatima', the cowrie and scallop shells. And more.

Central and North European cultures of the Bronze Age had a variety of fasteners, pins, needles and the like modelled, I propose here, in woman's image and likeness. Sometimes only the perineum is represented; sometimes we find surrealist pins delineated with proud breasts as well as a pelvic triangle and vulva. Sometimes the breasts are naturalistically dual; sometimes they are repeated just as in the multimammia of the famous Diana of Ephesus. (My typist first read the last word in the scribbled draft here as *emphasis*. See map and figures, below.)

The present interpretation has not occurred to archeologists, assuming they have not suppressed the matter as "indecent" or objectionably "prurient". Their failure, if it is not attributable to anesthetizing ideology, results from their exclusion of language as a datum in archeological and prehistoric research. For if language without writing or other recording devices does not directly fossilize, linguistics can nonetheless, through the comparative method and the study of lexical fields, provide answers where pictography is at work.

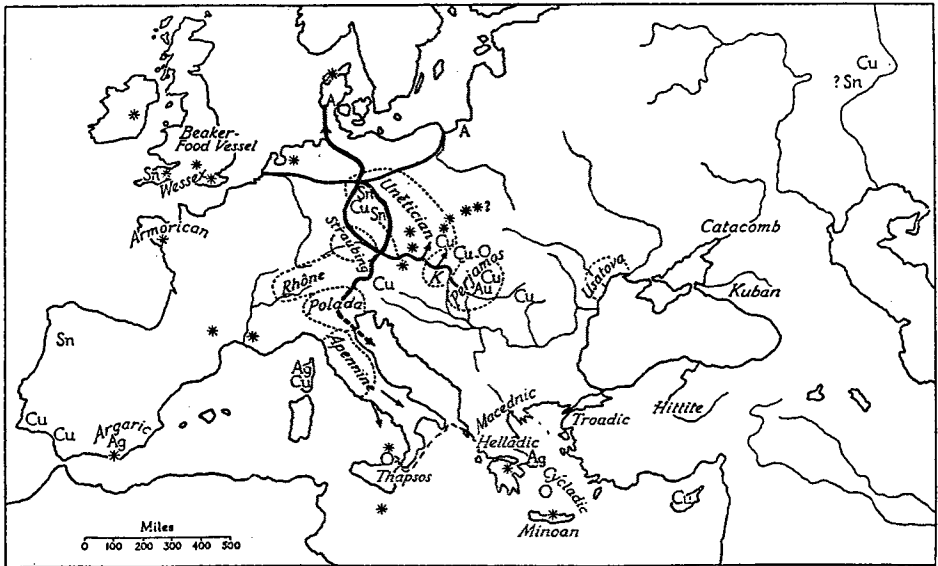
The needles themselves of millennia past find no clearer explanation than when ordinary people of our own day resort to their familiar metaphors about the

needle's "eye". Just as needles from the early Bronze Age down to the Roman period are aptly described by the Romance and modern Greek words cited above, it would follow that the punning treatment of needles and pins as icons of woman was reinforced by lexical facts of the prehistoric smiths' languages. It is a case of pictography, and pictography is "preliterate writing". It is the only kind of writing available to prehistoric peoples and it is the writing in which pre-Scriptural religion and medicine is to be found.

These ancient needles, then, were not just utilitarian fasteners. They were, I submit, also amulets against all ills. In superstitions that were born ages before Pasteur death and illness are blamed on the evil eye.

In pre-Scriptural, preliterate religion and folk medicine, people place their trust, their faith, against those threats and evils not in the cross of the Savior nor in the words of the Prophet, but in bodily display of their genitals and in graven images of the body, which is the

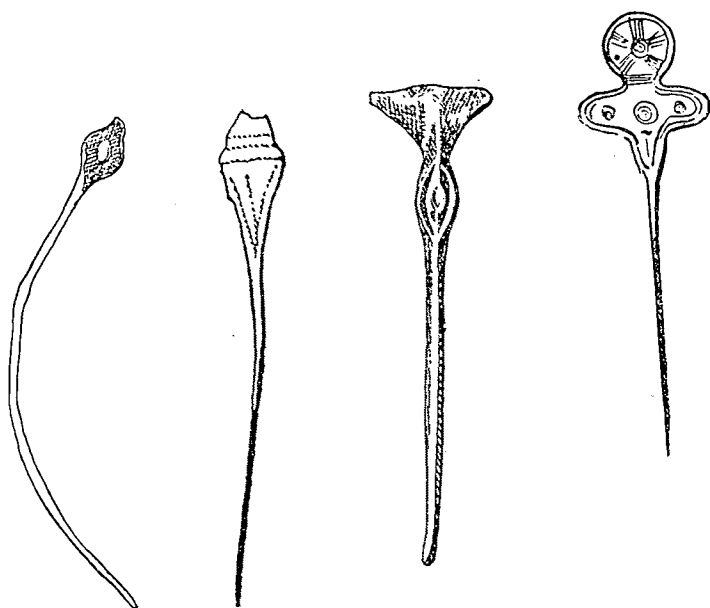
FONS ET ORIGO VITAE.



Map II. Early Bronze Age trade and cultures

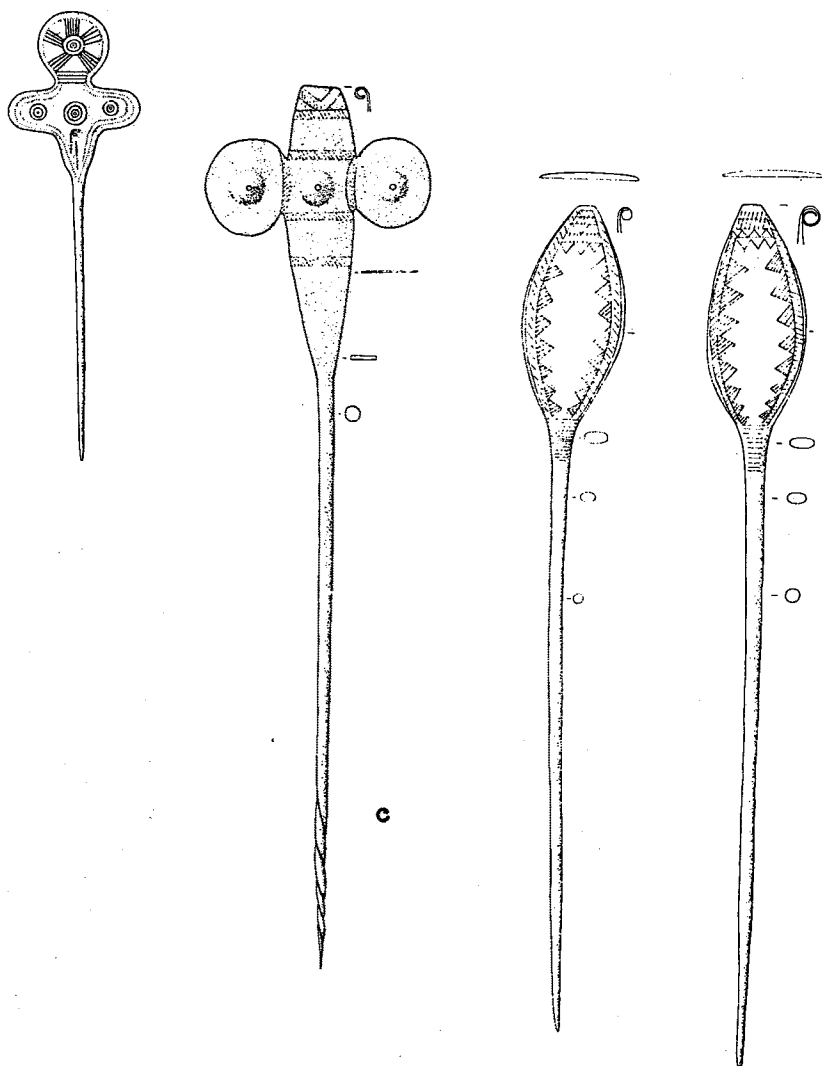
A = Amber Au = Gold K = Kisapostag Sn = Tin ----- Mycenae trade route
 Ag = Silver Cu = Copper O = Obsidian ——— Amber routes * = Segmented fayence beads

Map of Bronze Age Cultures in which the needle's "eye" is an icon of woman (after Childe 1958: 165).

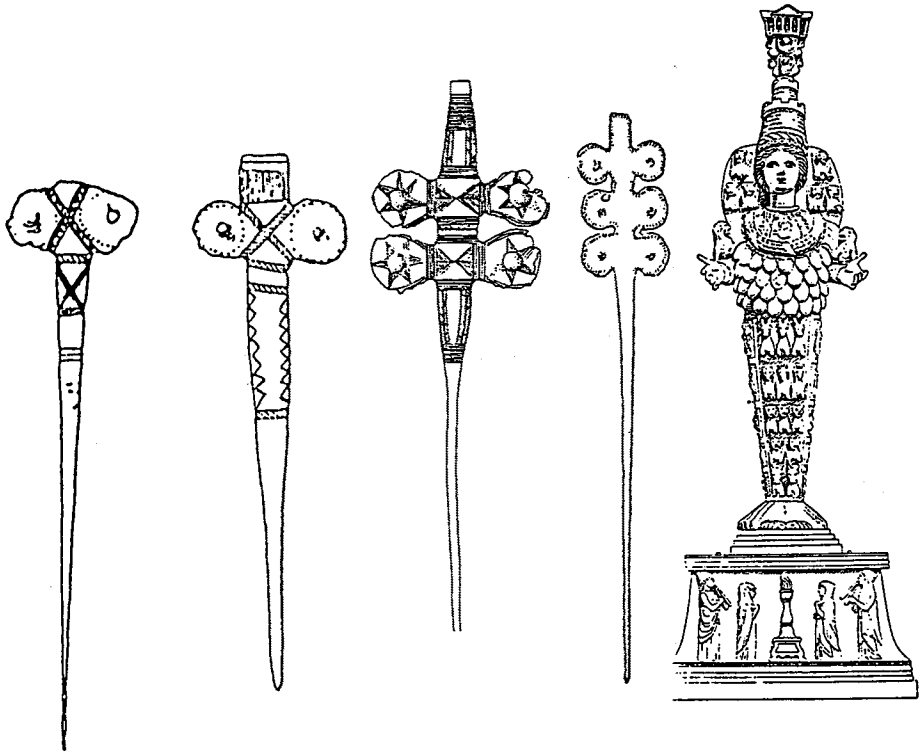


Bronze Age needles/pins in woman's image and likeness:

1. Silesia and Bohemia (Schlemm 1908: 44).

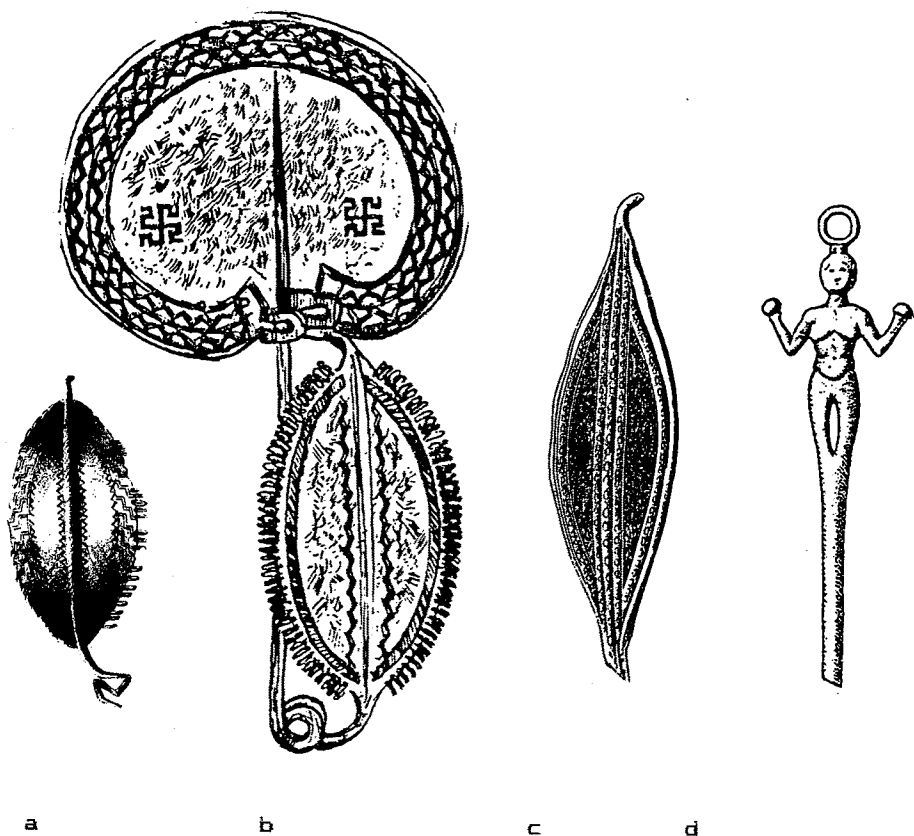


2. Northern Italy (Carancini 1975, Tafel 3)



3. a) France: Clucy (Jura),
 b) Aveyron (Déchelette 2.1910 :137-39);
 c) Switzerland: Rhône Culture (Sauter 1976:83);
 d) France: Côte d'Or (Coutil 1925:).
 e) Diana of Ephesus, with multimammia.

Figures c) and d) have been misinterpreted as trefoils [sic]; they portray multimammia, i. e. repetition of the breasts. (See Cook 1914: 406-7.)



Iron Age pins/needles in woman's image:

- a) fragment of bronze fibula from a woman's grave at Ancona (Pigorini 1881: 99 and Table 3).
- b) Italy (Ancona), bronze fibula from a woman's grave (Maringer 1980:84, after Pigorini 1911).
- c) fragment of bronze fibula, Sylt (Schleswig-Holstein, Mestorf 1895: 521).
- d) CVLVS ACVS 'needle's arse', Lucca, Italy (Chantre 1886: 72).

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IX

SOCIOLINGUISTICS

PUBILECT: OBSERVATIONS ON NORTH
AMERICAN TEEN-AGER TALK

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Introduction

The following excerpt from a *Washington Post Magazine* article, published on March 15, 1987, expresses rather eloquently, the common observation that teen-agers speak differently, and that they probably do so intentionally:

There was a time when we spoke in code: the language of adolescence. Adults still cling tenaciously to the vocabulary that they grew up on, those words that were once essential to both communicating and establishing a mind-set. But, in the halls of schools across the land, wild-eyed youths are flinging freshly invented words and newly coined phrases at one another with the hope of including a Few and, at the same time, excluding Us (p. 27).

As the article implies, it makes no real sense to belittle such differential speech patterns since, after all, adults too "cling tenaciously" to many of their previous adolescent ways of talking. This perceptive article also suggests that the apparently idiosyncratic manner of speech that teen-agers invariably manifest offers a unique insight into how language is used for group identification and solidarity. The study of generational, or age-based, differences in speech constitutes not only a useful taxonomic analysis of a discourse phenomenon, but also a framework for understanding the relationship between language and the formation of a "mind-set." The speech of North American teen-agers shows, perhaps more emphatically than do other sociolinguistically-determined language *Gestalts*, that the social situation is a powerful determinant of verbal behavior.

The purpose of the present paper is to discuss the principle discourse traits of the speech of North American teen-agers which, for the sake of convenience, I shall designate *pubilect*. This is, of course, a terminological blend of "puberty" and

"dialect," and is, thus, an abbreviation for the "dialect of puberty." My observations are based primarily on taped conversations of teen-agers (aged 14-17) living in the Toronto area. Since I sought to capture pubilectal speech in its natural contexts, it was necessary to ensure that the adolescent informants were not aware of the fact that they were being interviewed by a linguist. Therefore, the recordings were made casually and without the awareness of the informants, so that there was no intrusion whatsoever upon their verbal behavior. The elicitation technique consisted in asking the teen-agers to make comments about events and experiences in their lives (*Why are you studying X at school? Why do you wear those clothes? Why are you still dating that boy/girl? Why do you listen to that music?* etc.) while they were being recorded on a hidden microcassette tape recorder. Other teen-agers, rather than adult field workers, were used to elicit the conversational material. For ethical reasons, these particular tapes have now all been destroyed. In addition, one tape recording session was made with several teen-agers who were asked by a colleague of mine at the University of Toronto, Prof. Alan Gordon, to explain, in their own words, what semantic differences existed between three closely-related terms: "nerd," "dork," and "geek." The findings of all the tapes have been matched against the conversations of teen-agers on North American television and in films, in order to have some objective criterion for ensuring that the data collected were authentic and representative. The programs and films selected as "controls devices" were the ones which intentionally built into their scripts and dramatic techniques pubilectal speech patterns (e.g. *Family Ties*, *Revenge of the Nerds*, etc.).

The present study is restricted to the pubilect exemplified by middle-class informants. Pubilect, like any other sociolinguistic phenomenon, exhibits a predictable range of variation based on class structure variables. But it is not the purpose of this study to examine interlectal variation within a designated age group. So, the middle-class version of pubilect was selected, both because it was logistically the easier one for me to collect data on, and because it is the most prevalent one in North America, as was corroborated by the television and film controls.

The description of middle-class North American pubilect is not only intrinsically interesting in itself as a study of generationally-motivated differentiation in discourse, but also because it gives

the linguist food for thought on the relationship among language, thought, and social behavior. Above all else, it might be seen to reveal insights into the non-arbitrary connection between speech and *Weltanschauung*. In a way, this line of investigation will allow us to put the so-called Relativity Hypothesis to the litmus test of empirical observation. Therefore, a brief discussion of what may be called the "Whorfian implications" of this study will constitute its closing remarks.

Adolescence and Language

Developmental psychologists and psycholinguists have traditionally been occupied with investigating the patterns of language ontogenesis in infants. Rarely have they extended the purview of their investigative microscopes to include the development of language during puberty and, more importantly, the relationship of adolescent speech to the psychological and social variables associated with the processes of maturation. Whatever the reasons for this conspicuous lacuna in psycholinguistic research, it is transparently obvious that the changes in speech that characterize the adolescent years should merit much more attention than they have received.

The emergence of pubilectal speech on the developmental timetable of children is a clear sign that they have begun their transition to adolescence. Pubilect coincides chronologically with dramatic changes in physical appearance and with the conquest of the Piagetian formal operations. And, more significantly, it is closely linked to the socio-affective changes that surface at adolescence. For the first time since birth, teen-agers are able to examine their own thoughts and those of others in a socially-meaningful way. Language becomes a means for identifying with peers. At the same time, pubilect is tied to a typical mind-set of adolescence which Elkind (1967) calls "adolescent egocentrism." Noting that teen-agers typically fail to distinguish between what they and others think about, Elkind points out that adolescents consequently become inordinately concerned about their appearance and behavior. Adolescents typically believe that there is an "imaginary audience" that is constantly observing them. This egocentrism plays a crucial role in determining characteristic pubescent behaviors and feelings such as self-consciousness, loudness, and faddish dress codes. In a similar fashion, Erikson (1963, 1968) points out that the teen-ager's egocentrism is at the core of his/her consciousness. Erikson

ties it, as well, to a struggle to establish a unique identity. I would go one step further and suggest that it is a powerful emotion that motivates the teen-ager to seek out peer support and approval. The latter, however, exacts conformity in dress, appearance, and language. Thus it is that pubilect emerges from this "affective tension" between ego-centrism and the need for social bonding with one's peers.

Describing Pubilect

The description of a discourse phenomenon can, of course, be approached from two angles: from that of pragmatics and from that of psychology. In the former case, the stress is on elaborating taxonomies of the targeted speech acts in themselves: i.e. on the discourse phenomena as abstract categories, or subsystems, of human communication. While this kind of scientific enterprise is of significant theoretical interest, it falls clearly beyond the scope and main objective of the present discussion. From the psychological angle, however, there is much more to gain by focusing on the adolescents themselves and on how their behavior is embedded in the way they talk. It is this latter perspective that will now be briefly pursued in describing pubilect. The psychosocial approach is particularly appropriate because it allows us to relate language to developmental changes. Pubilect can be said to be a concomitant of changes in the child's physiology and cognitive structure that signal the advent of puberty and adolescence. As Britton (1970:234) has aptly put it, the new forms of speech developed during adolescence emerge through "a process of dissociation," so that they can meet new psychological and social demands. The particular institutionalization of pubilect into patterned adolescent verbal behavior is, needless to say, guaranteed by social structures. Thus, the specific characteristics of middle-class, North American pubilect are spread and conventionalized through peer contact in the various school and social contexts in which North American teen-agers find themselves. These characteristics are reinforced by the various North American media.

Given the space limitations of this paper, I will focus on what I consider to be three of the most interesting aspects of pubilect. It can be said that pubilect is differentiated from the speech of younger children in being highly *emotive*, *connotative*, and *socially-coded*. These are, clearly, general

psychosocial categories which are embodied into specific speech traits according to structural (nature of the language spoken), spatial (dialect), social (class, education, etc.), and other macrolinguistic parameters.

By emotive language programming I wish to refer to the frequent tendency in adolescents to exhibit exaggerated emotions through their verbal behavior. Such features as increased rates of speech, overused intonation contours, expressive voice modulations, and the like bear witness to the abovementioned egocentrism and to the related tendency to project one's subjective awareness of feelings. As Georges Gusdorf (1965:40) remarks, this kind of adolescent verbal behavior shows, rather dramatically, that we "must consider speech not as an objective system... but as an individual enterprise." A few examples from the recorded spontaneous conversations will suffice:

- "He's sóooo...cute!" "She's fáaaar out!" "Amáaaaazing!" etc. These exemplify the common emotive pattern of overstressing the tonic syllable and of prolonging the vowel of key expressive words and structures.
- "We went to the movies yesterday... And we saw these two creepy-lookin' guys... But we didn't, like, realize, like they were really her, Nicole's, cousins... Was it embarrassing, or what!" The raised intonation contours (as in interrogative sentences) in conversational sequences such as this one seem to be used unconsciously to ensure the full participation of the interlocutor. The emotive effect of this feature is enhanced by accompanying gesticulations and facial expressions.
- "Yuch!" (*disgust*), "Woah!" (*surprise*), etc. There is an abundant use of interjections, exclamations, grunts, etc. in pubilectal speech which clearly reflects the need of adolescents to draw continual attention to their feelings or attitudes.
- "Like, uhm, he had already eaten, and, like, he didn't, like, want to..." Verbal hesitation mannerisms, such as this one, seem to indicate an unconscious hesitancy in expression. Adolescents probably have a harder time

relating factual experiences because they tend to utilize affective, rather than strictly logical, ways of organizing their thoughts.

The highly connotative aspects of pubilect constitute what is perhaps its most salient characteristic. The excellent work of Connie C. Eble (e.g. 1985, 1986a, 1986b) on teen-ager "slang" has made it clear that connotation is at the core of the teen-ager's socio-affective organization of reality. The interview conducted by prof. Alan Gordon provides sufficient information on this feature. Four teen-agers were asked, essentially, to explain in their own way the difference among three pubilectal items: *nerd*, *dork*, and *geek*. From the responses given, it is interesting to note that no denotative explanation was ever put forward, nor was one deemed to be possible. One of the informants said, rather revealingly, that all three words had the same basic meaning, but that their "connotations" [*this word*] were different. The word *nerd* evoked the image of: "Someone I would never talk to;" "A social outcast... male...greasy...studies all night chemistry and physics." It is interesting to note that one of the informants said that "I cannot picture a girl *nerd*," thus suggesting that gender distinctions are incorporated into the matrix of connotations employed by adolescents. Predictably, physical appearance is a key component of an item's connotative range: "A *nerd* wears his belt up to his ribs...has short pants...wears horn-rimmed glasses...doesn't choose his own clothes...his shirt is done right up to the top button...his glasses don't fit on his nose." A *dork*, on the other hand, evokes a different array of connotations: "A *dork* is more socially accepted...and he talks to people;" "*Dorkness* is not a permanent characteristic;" "*Dorks* bump into people, drop things, but they still have friends." A *geek* is someone "who doesn't take showers...whose hair is always sorta greasy;" "Some *geeks* are really slimy and drippy." One informant put the three into a global perspective by saying that "*Nerds*, *dorks*, and *geeks* are being themselves...they don't mean to be offensive."

All three personality types were seen to have some redeeming features, but the particular school attended by the informants had a term for a "non-entity:" a *leem*. This is someone, male or female, who "breathes and uses up...wastes...oxygen." Significantly, all four informants pointed out that they could picture exactly who the *nerds*, *dorks*, *geeks*,

and leems were in their school. They could match each item to a person rather easily. When asked if university students and younger children used such words, all were in agreement that, although these age groups understood them, they "generally did not use them." This confirms, in a way, that pubilect is functional only during adolescence, even though some of its traits are carried over into adulthood. Indeed, apart from a few anachronistic lexical items which have become fossilized in adult speech patterns, most of the features which make up the particular physiognomy of a pubilect, in a specific culture, at a specific point in time, have disappeared by the late teens. The "life cycle" of a pubilect can, therefore, be seen to coincide with the transitional period from childhood to adulthood.

It should be mentioned at this point that the use of highly connotative language, as Lakoff and Johnson have persuasively shown (Lakoff and Johnson 1980, Lakoff 1987), affects the ways in which we perceive, think, and act. The use of pubilect with its high connotative content is intrinsically linked to adolescent behavior and modes of perception. Moreover, it performs the crucial function of drawing together members of a society's adolescent group, and of keeping outsiders out. This is what I mean when I say that pubilect is socially-coded. Pubilect allows teen-agers to exhibit certain sets of verbal responses so that they can gain easy access to their peer group. Fear of rejection is rather pronounced. The teen-agers interviewed by Prof. Gordon expressed the desire to be perceived as cool. Their greatest fear was to be thought of as *losers*, *twits*, *bubble-heads*, *air-heads*, *slime-buckets*, or *grossers* (= "Someone who grosses you out"). The language of adolescence both expresses and shapes the teen-ager's egocentric *Weltanschauung*, and, at the same time, provides a means for social bonding outside of the family environment.

A Few "Whorfian" Observations

Needless to say, it would be impossible to go here into the pros and cons of the Whorfian Hypothesis. Suffice it to say that, for the present purposes, I will adopt what might be called a modified weaker version of this Hypothesis. This version does not postulate a causal link among thought, behavior, and language. Rather, it posits that the particular language one speaks gives cognition its

culturally-determined shape. The images evoked by the particular labels and categories of one's language ultimately give conceptual space its configuration.

As Vygotsky's original work with children and adolescents suggests (e.g. 1962), language and thought start to become highly interdependent during the adolescent years, when language starts to function largely as the servant of thought. For Vygotsky, language and thought are complementary forms of human behavior, constantly interacting, but distinct in origin and in developmental ontogenesis. Vygotsky imagines two intersecting circles with the area of intersection being "verbal thought," and the remaining two areas being "non-verbal thought," and "non-intellectual speech." When it comes to pubilect, it can be said that the verbal thought it generates allows its users to extrapolate from experience its conceptual filters and templates. Once a word like *nerd* is established, teen-agers can discover meanings which are not simply traceable to the original referential domain. A modified Whorfian approach to language will allow us to take this kind of "creativity" into account. The emotive, connotative, and socially-coded dimensions of pubilectal speech both reflect and shape the adolescent's way of looking at the world. These are tied psychosocially to changes in other developmental areas during adolescence. In a phrase, those specific features of verbal behavior which adolescents commonly exhibit and which adults interpret as highly idiosyncratic are, in actual fact, creative speech strategies which allow them to gain entry into the "world of the mind." These strategies will change as the teen-ager matures towards adulthood. But their impact on the adolescent's consciousness will remain for a long time after. The features of pubilect are not just "modes" of communicating. Teen-agers live and act in a world largely called into existence by the categories of their own speech.

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SLANG AS POETRY

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"All slang is metaphor, and all metaphor is poetry." So said G. K. Chesterton in "A Defense of Slang," published in 1902 in a collection of "defenses" of such kindred subjects as rash vows, nonsense, ugly things, and detective stories. (110) Chesterton's syllogism is merely an extravagant expression of a common observation by many champions of slang who seek to give slang legitimacy by associating it with poetry. In 1885 in The North American Review, the most American of poets, Walt Whitman, had similarly asserted: "Slang, profoundly consider'd, is the lawless germinal element, below all words and sentences, and behind all poetry. . . . Such is Slang, or indirection, an attempt of common humanity to escape from bald literalism, and express itself illimitably, which in highest walks produces poets and poems, and doubtless in pre-historic times gave the start to, and perfected, the whole immense tangle of the old mythologies. For, curious as it may appear, it is strictly the same impulse-source, the same thing." (420) Certainly a straightforward equation of slang and poetry is not supportable, and Chesterton's lavish elevation of slang in the company of apologias for rash vows and ugly things indicates that his claim is not to be taken entirely seriously. Nevertheless, what is it that makes him and Whitman and other accomplished writers feel an affinity between slang and poetry?

This paper seeks to answer the question by examining the phonology, syntax, and lexicon of college slang for features typically associated with poetry.*

Any discussion of the phonology of slang must first acknowledge the oral nature of slang, which is consistent with its social functions. The orality of poetry, on the other hand, serves beauty and referential meaning rather than social connectedness. Although measured rhythm is often considered a defining characteristic of poetry, a poem does not even have to be uttered aloud to be a poem. But slang unshared cannot be slang. Despite these fundamental differences, both types of discourse foreground sounds to a greater degree than ordinary colloquial conversation does. Echoism, rhyme, alliteration, assonance, and punning--phonological devices that every school child can spot in poetry--are frequent in slang too.

Ralph and Earl, two personifications of 'vomit', were born by ECHOISM. Examples of RHYME include take a chill pill 'calm down', lite night 'good time', well hell 'that's life', beaucoup /buku/ 'great quantities of', frat rat 'fraternity member', fag-

hag 'female who keeps company with homosexual men', and slammin' jammin' throw down happy feet 'expression of sheer joy': "This pie is slammin, jammin, throw down happy feet." ALLITERATION is heard in Suzi Spaceship 'female who is out of touch with reality', dingledork (formed on dingleberry) 'playful term for someone who has said or done something stupid', reading room 'bathroom', and major makeout scene 'passionate kissing, etc.'. ASSONANCE marks lose move 'something stupid', tasty babe 'good looking male', face rape 'passionate kissing', and waste case 'a drunk'.

Other slang terms are clearly playing with sounds, but are not so easy to classify, e.g., neomaxumzumdweebie 'person whose personality is unattractive in every way': "That guy in my Chem class with a slide rule is truly a neomaxumzumdweebie." Some appear to be kinds of puns, getting their meaning in part from homophonous forms; e.g., brary dog 'someone who studies in the library' alludes to prairie dog, and Fayettenam 'Fayetteville, home of Fort Bragg and the Green Berets' is a blend that capitalizes on the phonological similarity of Fayette- and Viet-. One complicated slang term relies on the homonyms mall and maul together with the knowledge that North Gate and South Square are shopping malls in order to give the meaning 'make aggressive sexual advances' to the slang verb in "I North Gated and South Squared her."

The syntax of slang as compared with the syntax of poetry is a more problematic issue. The creative dimension of syntax in poetry and in the work of individual poets has received much attention. But the syntax of slang has hardly been remarked upon—mainly because slang is largely lexical, and individual slang words and phrases typically fit into an appropriate grammatical slot in an established syntactic pattern of a colloquial variety of the language. Thus hork 'borrow or steal' slips into the sentence structure as a verb: "I just horked this shirt from my roommate." Harsh 'criticize cruelly' changes meaning slightly and shifts without change in form from an adjective to a verb: "As soon as Tanya left, everybody started harshing on her new boyfriend." The frequency of acronyms shows the tendency of slang to shrink syntax into morphology, as in TAN from tough as nails: "Dirty Harry is really tan—so is his 354 Magnum"; or UYB from Uppity Yankee Bitch, or SAB from Social Airhead Bitch. The syntax of a slang item composed of several words or of an entire sentence is generally prefabricated, as in the sarcastic warning You would want to . . .: "You would want to leave my radio alone." Often the slang phrase is borrowed intact from music, films, or television. For example, Could it be . . . Satan! is a humorous response to something naughty: "And who is responsible for that? Could it be . . . Satan!" The sentence is used in imitation of the Church Lady on the television program "Saturday Night Live." As fresh or imaginative as some of these slang phrases may be, it is not because of syntax. At least superficially, then, a comparison of the syntax of slang and poetry yields little similarity.

Slang most boldly encroaches on the sacred preserve of poetry in its word-building processes, particularly in its

propensity for metonymy and metaphor, hallmarks of poetic diction. Among the METONYMS in current college slang are snow 'cocaine', granola or grape-nut 'someone who dresses like, acts like, and eats like young people of the sixties', munchies 'hunger', main squeeze 'girlfriend or boyfriend', and cancer 'diet soft drinks, sugar substitutes'. METAPHORS include couch potato, sofa spud, and sofa yam 'person who lies around doing nothing', technicolor yawn 'regurgitation', popsicle stand 'current location', tonsil hockey 'passionate kissing', snack bar 'girlfriend or boyfriend', butter cookies 'off brand of sneakers', and dead soldier 'empty beer can'.

Metonymy and metaphor are certainly not found exclusively in poetry and slang. The indirectness of reference by which these figures of speech evoke meaning is actually found throughout language. Ordinary conversation and standard expository prose are filled with so-called "dead metaphors" in which the original image has been lost, phrases like kill time, time flies, and the river runs. When they occur in discourse varieties other than slang and poetry, such common figures of speech are usually interpreted conventionally rather than metaphorically. But in slang and poetry, metonyms and metaphors are assumed to be "living" rather than "dead" and are salient features of the diction.

The question is why two such different types of discourse—one considered lofty and the other base—should give prominence to the same types of lexical items. Metaphor as the tool of poets has been the subject of speculation since the time of Aristotle. Writers over the centuries have marvelled at the potential of metaphor to push at the boundaries of human knowledge and experience. Poet Robert Frost puts it this way:

Poetry begins in trivial metaphors, pretty metaphors, "grace" metaphors, and goes on to the profoundest thinking that we have. Poetry provides the one permissible way of saying one thing and meaning another. . . . (36)
 . . . unless you are at home in the metaphor, unless you have had your proper poetical education in the metaphor, you are not safe anywhere. Because you are not at ease with figurative values: (39)

Metaphor, then, is consistent with the aim of poetry to create new meaning and thought. But how is metaphor appropriate to slang? In slang the indirection or imprecision provides a lack of clarity which calls upon users to rely on shared knowledge to evoke from new forms meaning already available in the standard language, thus enhancing the social function of slang.

In summary, many of the same phonological and lexical devices are more frequent, or less marked, in slang and in poetry than in other modes of discourse. Yet the two types of discourse are themselves quite different: slang is social, limiting, and irreverent; poetry is egocentric, transcendent, and aesthetic. The same phonological devices provide slang with humor and play and poetry with meaning and beauty. The same lexical devices

enhance the social, group identifying nature of slang and the individualistic, exploratory nature of poetry. Therefore, the resemblances between slang and poetry are instances of the same linguistic phenomena being used for different purposes, and do not entail the equation of slang and poetry.

* Observations and examples in this paper are from a collection of college slang used by undergraduates at the University of North Carolina at Chapel Hill during school year 1986-87. I am indebted to Beth Rambo for reporting to me the item North Gate and South Square, which she overheard in a conversation between two male students.

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Sociolinguistic Rules and Dynamicity: Insights from Polish Modes of Address¹

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I. INTRODUCTION

I.1 General Considerations

One of the major problems in teaching many foreign languages to native speakers of English concerns the expression of respect morphemes. The forms and their meanings are easy enough to memorize. In Polish, the respect morphemes of direct address encompass a total of only seven lexemes. A simple summary is easily given (cf. table 1, section II). Accompanying a chart of this sort is normally a set of social rules, e.g.

- i) the pronouns are for familiar or affectionate use and are automatically used with classmates and children; otherwise they should be used sparingly to avoid giving offense;
- ii) the *Pan-* forms are for formal or polite use and are used with new adult acquaintances and in business or proper social circumstances.

There are two things lacking in this approach. First, it leaves many social circumstances untouched, except by the vague admonition "to avoid giving offense." The admonition gives no concrete information of any kind, in particular that the use of familiar forms implies a substantial degree of intimacy in the relationship. That is, it becomes a different kind of relationship, and without mutual commitment to this change in the relationship, no use of familiar forms of address occurs. Secondly, rules of this sort seem to be formulated as if the social context of language were static. Presumably, at some point during the 12 years between their formal introduction and the birth of their third child in their seventh year of marriage a man and a woman must have found occasion to switch from the *Pan-* forms to the *ty*. But rules *i* and *ii* tell nothing about the circumstances of change, and this is a problem. It is precisely the knowledge of such circumstances which is critical, if one is to be truly fluent in Polish.

I have examined a number of cases in which a formal relationship between a Pole and a foreigner (usually me) shifted to a more intimate one. A comparison of these cases permits the statement of the dynamic principles involved in the change. These principles involve the determination of the time, the place, and the circumstances of the change from more formal to more intimate. Most important, it is possible to identify the individual who has the right and the responsibility to initiate the change to a more intimate relationship. It is this right which cannot be violated without giving offense and is crucial to a complete description of this topic. Finally, I consider exactly what the meaning of static/dynamic is in regard to descriptions of this sort.

I return to these points after reviewing the linguistic data. Before I address the linguistic topic, however, I want to outline some terminological questions.

I.2 Sociolinguistic Considerations

The question of modes of address, politeness, and courtesy in speech is concerned with sociolinguistic rules. These are the principles which are sensitive to a particular social situation on one end. Having determined the relevant circumstances on that end, they effect the choice(s) among a set of linguistic alternatives at some level of language on their other end. The choice may be a very broad one, as in the choice of registers (or even the choice of language), or it may be very particular, as in the choice of a single lexeme.

The present study is very close to the latter end. It concerns the choice of address lexeme from a small, closed set of lexemes in the context of an interpersonal relationship. Normally,

when I use the term "relationship," I am referring to a logical relationship (AND, OR). In the present study, however, the "relationships" are all of the interpersonal type.

II. THE DATA

I begin with the data on the possible modes of second-person address in Polish. The relevant lexemes are given in table 1, along with definitions of the words used. As indicated by

<i>ty</i>	'thou'	<i>wy</i>	'you (pl.)'
<i>Pan</i>	'Lord, Sir'	<i>Panowie</i>	'Lords, Gentlemen'
<i>Pani</i>	'Lady, Madame'	<i>Panie</i>	'Ladies, Mesdames'
		<i>Panstwo</i>	'your Nobleships'

Table 1: DEFINITION OF ADDRESS MODES

the definitions, *ty* and *wy* are pronouns; the rest are nouns. *Ty*, *Pan*, and *Pani* are singular in inflectional morphology and in adjective and verb agreement. *Wy*, *Panowie*, and *Panie* are plural in adjective and verb agreement and in inflectional morphology. *Panstwo* has a collective suffix. It has singular inflectional morphology but in this case takes plural verb agreement.

The morphemic analysis of these lexemes and the structural patterns they are related to allows us to identify a number of functional categories. Table 2 shows the semantic groupings covered by the various modes of address: informal (*ty/wy*) vs. formal (*Pan-*); male

	SING		PLURAL	
	SUBJ	VERB AGREEMENT	SUBJECT	VERB AGREEMENT
INFML	<i>ty</i>	m or f, 2 sg	<i>wy</i>	virile or other, 2 pl
FML MSC	<i>Pan</i>	m, 3 sg	<i>Panowie</i>	virile, 3 pl
FML FEM	<i>Pani</i>	f, 3 sg	<i>Panie</i>	other, 3 pl
FML MIX	-	-	<i>Panstwo</i>	virile, 3 pl

Table 2: STANDARD MODES OF ADDRESS IN POLISH

(abbreviated MSC: *Pan/Panowie*) vs. female (*Pani/Panie*) vs. mixed groups (*wy/Panstwo*); and singular (*ty/Pan/Pani*) vs. plural (*wy/Panowie/Panie/Panstwo*). Thus there are three singular and four plural combinations.

Before proceeding further, I want to comment on gender in Polish. Polish has grammatical gender: the wall (*ściana*) is feminine, the ceiling (*sufit*) is masculine, and the window (*okno*) is neuter. For human beings in the singular, gender matches sex with very few exceptions, which are of no interest to this study. In the plural, however, the division is different. There is little or no trace of grammatical gender for inanimate objects or for non-human animate creatures. But with people, there are three types of groups that can be defined on the basis of the grammatical marking: groups of men only, groups of women only, and groups of mixed sex. Any group that includes a man or men, whether or not there are women present, takes the so-called virile agreement, which is restricted in reference to male human beings: in the presence of *virile*, we know only that men are present. Groups of women only take the simple plural agreement, just like animals and inanimate objects or any combination of the three.²

I turn now to a consideration of the generalizations that can be made about these data.

III. GENERALIZATIONS

I now consider the question of generalizations concerning the shift from formal to informal modes of address. These generalizations must include what is right in rules *i* and *ii* and must include the critical points left out. That is, given the initial use of *Pan-* (formal mode) and a subsequent shift to second-person pronouns (informal mode), we need to specify who initiates the change, when, and under what circumstances. The situation is summarized in a number of statements in section III.1, followed by a discussion of the competing conditions and some apparent violations of the general statements.

III.1 The General Rules

The rules following are based on my observation of 25-30 cases in which I was able to determine the ages of the people involved.

- 1) Initially, the normal mode of address between adults is the formal mode (except among fellow-sufferers in adversity, e.g. students).
- 2) A minimum of four to six weeks of regular contact follow.
- 3) Then, assuming that both people are committed to a deepened relationship, one person issues an invitation to a social event at which food is shared.
- 4) With two people of the same sex and age, either may issue the invitation. But ...
- 5) If one person is significantly older than the other, the invitation must come from that person (the age privilege).
- 6) If one of the two people is female, the invitation must come from her (the sex privilege).

Each of these generalizations requires further qualification, especially if the people differ in both age (5) and sex (6), which give contradictory predictions.

III.2 Discussion

I begin with some more general considerations and continue with comments on the six generalizations in order.

The Polish system of respect morphemes is not unusual. Russian has a similar but morphologically less complex formal/informal system. The custom in Russian is so strong that it easily survived the Communist Party's attempt to eradicate it. During the fifties a similar attempt to replace *Pan(i)* with *Obywatel(ka)* 'citizen(ess)' also failed in Poland. The failure should have been foreseen. The social taboo requiring *Pan-* forms at the beginning of all adult relationships is extremely strong.

It is also important to remember that these rules are formulated in the context of an American interacting with Poles. The rules are basically valid for relations between native Poles, but the time spans are different. Pole-to-Pole relations constitute a distinct if related question, but one which is beyond the scope of the present study. I turn now to a discussion of the individual rules.

Rules (1) and (2) are uncontroversial. But the length of time before the invitation is issued varies according to the regularity, intensity, and geniality of the contact between the individuals and their mutual expectations for the relationship. Extremely intense contact under adverse external conditions shortens the period; very casual contact may lengthen it; disputes during the initial period may delay it indefinitely.

Rule (3) is also uncontroversial. At this point I am speculating, but the type of event for which the invitation is issued hints at the expectations for the relationship. That is, a dinner aims at a more elaborate relationship than tea, and tea for two is much more personal or even more intimate than a tea party.

Rule (4) needs no comment.

When rules (5) and (6) do not conflict, i. e. when the individuals in question are of the same sex or of the same age or when the woman is older, there is no difficulty. But when the individuals differ in both age and sex with the woman younger, the numerical value assigned to the expression "significantly older" must be adjusted. "Significantly older" may be a slippery concept, but ten years suffices for two people of the same sex. However, in a relationship between an older male and a younger female, a ten-year age difference is ignored out of hand. Twelve years was ignored twice, to my certain knowledge. In a third case, I was sixteen years older than the 23-year-old woman, and the invitation to a meal was masked. She extended the invitation as if it were coming from her mother, with whom she lived, to my entire family.

Thus, in the case where the age and sex privileges are in conflict, the age differential must be increased before the age privilege can supersede the sex privilege. If the man is an entire generation older than the woman, the age privilege supersedes the sex privilege. But anything less than that is negotiable, and fifteen years or less is automatically superseded by the sex privilege. In other words, in the face of the sex privilege, fifteen years is not "significantly older". Contrast that to the case of two men or two women, for whom ten years suffices. This gives us rule (7).

- 7) If the sex and age privileges are in conflict (i.e. if the older person is male), "significantly" older requires a generation (~25 years).

In sum, rules (1)-(7) seem reasonable. When the sex privilege opposes the age privilege, a greater age difference is required, which is also reasonable. However, the true test of any set of generalizations is the exceptional case. In the set of experiences which form the basis for this study, there are cases involving some degree of violation of the norms articulated which I now examine to show that the exceptions they provide are not flaws in the system.

IV. FOUR EXCEPTIONAL CASES

The first case involved a Polish man my age. We were attending a series of seminars together, living in the same wing of a college dormitory, eating in the college cafeteria together, and sharing the same bathroom. We spoke English as a rule, since none of the rest of the people at the seminar spoke Polish. But when alone we spoke Polish via the informal mode from the second day (i.e. as soon as we began speaking Polish together) at his initiative. This was unusual in the lack of time from introduction to informal mode and in the lack of invitation to food. However, as we were eating and living together, invitations to food were moot, and as we were the only two Polish speakers there, a stronger bond than usual was forged. This event occurred in Seattle, and it is clear that he had at least partially adjusted to the American norm.

The second case also involved a Polish man my age. We had been working on a project for about three days and were friendly, if still formal. No food had been shared. On the fourth day there was a sudden influx of Poles, new arrivals in the city whom neither of us knew. Among themselves, the new arrivals were using *ty*. There were introductions and formal-mode talk between the two of us and them. By unspoken consent, my colleague and I began using the informal mode with each other. Here both the time and food-sharing rules were violated, but our relationship had been made closer in comparison with our relations to the others present.

The third case has a partial shift from formal to informal. While living in Lublin, Poland, we frequented the marketplace, after a short time trading exclusively with three or four old men and women. In the beginning the full formal set of address morphemes were used. But by the year's end there was a change. They were still addressing me as *Pan* whenever they used an overt subject. But in the absence of an overt subject, the verb endings frequently came out in the second person singular. Samples of food had been shared, and as all of them were of my mother's generation, the age privilege was clearly theirs. In some cases, of course, the sex privilege was, too. Still there had been no formal invitation to food, so the

conditions were not fully satisfied. At the same time, the change was not complete, so there was a substantive parallel. Again, this is a reasonable accommodation to the actual situation.

The fourth case involved a female student about fifteen years younger than I. I should preface my comments with the remark that Polish students are extremely proper with their professors and were almost too shy to speak to me on the street or even in class, a situation I worked hard to modify. In any case, I was teaching this particular student aikido. For two weeks we had been working out together at the gym, speaking only English. During the third week I was teaching her a technique which seems very involved but which is only the combination of two other techniques in a particular sequence. She was making a mistake in her sequencing, and I explained what was wrong in Polish. She replied in Polish, using the familiar forms, and the rest of the lesson was in Polish in the familiar mode. However, the use of *Pan* in sports is generally considered out of place. Fellow athletes are like fellow students in this respect. In class, at the university, or in any official function, she still used the formal mode or spoke English, which Poles perceive as much less formal than Polish.

In short, in none of these cases was there a clearcut violation of any of the norms. The norms were stretched in conditions of an unusual degree of psychological intimacy resulting from external circumstances. Now circumstances "beyond our control" are often the reason (or excuse) for the actual violation of many social or cultural norms. In this Poland is no different from anywhere else, and the shift from formal to informal modes of address in language is no different from any other custom. If anything, my experience shows that Poles' treatment of modes of address is conservative, even in the face of circumstances "beyond our control". In the absence of such circumstances, the mode of address norms are not violated.

V. DISCUSSION

There has been a good deal of controversy on the question of whether the grammar of a language is a static or a dynamic object. The usual stratificational response to this controversy is that the question presents a false dichotomy. Still, the impulse to ask is strong, and in the present case, the reason for this is clear. We have a linguistic situation which applies to a cultural phenomenon, courtesy in modes of address. Since our relationship with any individual is dynamic, a static description of the underlying system seems most inappropriate.

However, such an understanding of the operation of underlying systems is distressingly superficial. A complete underlying system must provide the mechanism for all possible choices. That is, it should contain the data in table 1, with all its grammatical ramifications (inflection, agreement, etc.). These data are not "dynamic" in themselves: they have not changed significantly for generations. Moreover, making a choice among the forms in a particular instance is dynamic in only the simplest processing sense. That is, my relationship with this person requires the use of mode of address *X*.

Now the above comment is sociolinguistic, in that it relates pragmatic knowledge (i.e. of a social relationship) to linguistic structures. It results from the application of rules (1)-(7). They effect the choice of address lexeme in a particular instance, which is minimally dynamic, but they constitute a system *inter se* which has not changed significantly for generations. They constitute a system which is stable, if not totally static.

The dynamicity arises from the dynamics of the personal relationship. When the relationship changes, the mode of address changes to suit. That is, the speaker must change the sociolinguistic rule by which the mode of address is chosen for the addressee involved. The information needed for this choice in the case of a non-native speaker of Polish relative to a native Pole is included in rules (1)-(7).

If the static/dynamic question is now asked about the nature of rules (1)-(7), I cannot give a one-word answer. I know only that materials like rules (1)-(7) need to be included in

standard teaching grammars of language if we expect to prepare our students for survival in the cultures where those languages are spoken.

NOTES

¹I am indebted to Dr. Halina Stephan of the University of Florida for reading and commenting on this study. It has benefited from her advice in several ways. Of course, the responsibility for the final version is mine alone.

²A real sexist structure. See Sullivan 1981.

³I am indebted to Dr. Stephan for this information.

⁴Dr. Stephan has reminded me that this cultural code is both weaker and somewhat different in form lower down on the social scale. But the data still indicate a partial shift from formal to less formal usage in the shape of a shift from urban to rural dialects. Poles feel that rural dialects are much less formal than urban dialects.

⁵Professor Saul Levin has reminded me that details of individual rules may well have changed in this period of time without effecting a fundamental change in the overall system.

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X

LANGUAGE ACQUISITION

STRATEGIC DISCOURSE AND L2 ACQUISITION

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The flowering of discourse studies over the past decade or so has begun to have an effect on the methodology of foreign-language instruction. Kramsch (1981) represents a notable, early attempt to apply the findings of discourse analysis directly to classroom activities. Exercises were provided by Kramsch for the teaching of such conversational features as turn-taking, interrupting, paraphrasing, hesitating and restating. The attention given to discourse organization was a welcome one because the field of foreign language instruction had generally ignored it. Most teachers continue to view dialogs as exercises in the exchange of factual information regarding the target society. Most discourse in the traditional audiolingual classroom is teacher-managed. Student performances in the target language are almost always initiated by the teacher in the guise of direct questions, mim-mem exercises, or prepared dialogs. In the more avant-garde audiolingual classrooms, students may be directed to perform in information-gap games, role plays, or simulations (see, for example, Jones 1982). The discourse that takes place in such exercises may have the appearance of being creative and learner-initiated but it is nevertheless structured around matters of concern to the teacher.

But one might observe that the teacher can do no more and the student should expect no more. It could be argued that the major difference between formal foreign language instruction and immersion in the real life of a society that uses another language is that the former situation offers guidance and systematic exposure to the new language. Should one not admit that the classroom is artificial and isolated from the reality that will come when the learner makes that quantum leap into the society? Is it not this very isolation that provides the opportunity to learn how to speak a new language with the least amount of emotional strain? The problem is that learners do not come to the classroom as less human than they are outside. They arrive with the same expectations in a foreign language that they have in the language or

languages they already speak. If they have had formal instruction in another language, these expectations may be lowered as they anticipate a routine of classroom activities that is familiar to them. In such a situation how could learners ever be expected to undergo the same processes of acquiring a foreign language that they underwent in learning their other languages naturally?

According to Stephen Krashen and his colleagues (see Krashen and Terrell (1983)), students enrolled in formal instructional programs can indeed acquire a new language naturally. If we accept Krashen's distinction between 'learning' and 'acquiring', students actually have little choice in the matter. Krashen believes that all humans are programmed to follow a natural order in acquiring language, whether it be the first one or subsequent ones. It is not my intention here to explore the validity of this assertion--which has been made by a number of researchers. Instead, I question the application of it in the classroom, especially as it relates to discourse. Krashen and Terrell (1983) call their methodology the 'Natural Approach.' Its fundamental technique is to enhance the supposedly 'natural' ways that people acquire language: give them lots of good input in the target language and don't insist that they speak right away; formal grammar instruction is de-emphasized because it encourages conscious learning which is transitory rather than unconscious acquisition which is enduring. The tendency among learners to think constantly about the structure that underlies what they are trying to say is termed the 'monitor.' Monitored speech is not natural because it shows that the learner is thinking more about the rules of the language than about what he or she really wants to say.

Almost any formal presentation by the teacher of grammar is likely to be ill-advised by adherents to the Natural Approach because it can never lead to true acquisition, according to Krashen. The teacher's preferred role in the classroom becomes one of 'enhancer' of acquisition, making the environment conducive to the natural acquiring process.

I find it difficult to accept such a view of instructor and language learner. Are teachers so inappropriately placed vis-à-vis their students that they can never be active shapers of the acquisition process? Are learners nothing more than embodiments of language acquisition devices that turn 'meaningful input' into 'intake' and produce 'significant output?' Is

monitoring so irrelevant to the acquiring of a new language that it renders discourse unnatural? The results of a study with beginning students of English as a foreign language conducted at the University of Delaware support a negative answer to each of the above questions. There is evidence that teachers can intervene actively in the acquiring of the target language by their students who, in turn, can be led to become proficient in the management of natural discourse.

Before describing the study, a few words need to be said about monitoring. Incipient learners of a new language must gain control over the grammatical artifact of that language as well as become familiar with the conventions that govern discourse in it. Obviously, these matters are not of so much concern to fluent users of the language. To some extent, however, it is likely that everyone--including proficient speakers--engages in a certain amount of monitoring. Phenomena such as self/other repair point to the awareness that habitual users of a language have about the organization of their discourse. Without a properly functioning auditory channel, pronunciation cannot be monitored to avoid misfirings in articulation. As I prepare this paper, I know what I want to say and how to say it but, nevertheless, I find myself revising as I go along. My conclusion about monitoring is not that it is limited to second-language acquirers or that it is bad but rather that it is a naturally occurring phenomenon of all speakers that changes according to what its principal driving force is. For fluent speakers, monitoring is driven primarily by personal intentions, with lessened concern for adherence to grammar and conversational conventions. The less fluent the speaker, the more concern is shown for grammar. Following Vygotsky (1978), we can say that there are three agencies that regulate the monitor. These agencies are labeled: the 'object,' the 'other,' and the 'self.' For 'object' we can read 'grammar' and all matters relating to conventions of discourse. 'Other' regulation is in evidence when the speaker's utterances are shaped by what others are saying. 'Other' regulation is actually a two-way street, with each interlocutor either being regulated by the other persons in the discourse or regulating them. In the familiar classroom scene, the teacher is often the regulating agency and the student the regulated one. 'Self' regulated speech is what is generated out of the interlocutor's own desires or intended goals. While self-regulation is tantamount to freedom of expression, no one can be fully self-regulated. As participants in social

discourse, speakers must achieve a balance of object, other and self-regulation. The problem with learning a new language is that object and other-regulation dominate to the extent that self-regulation becomes inoperable (see Lantolf and Frawley 1983 for more detail on the application of Vygotskian principles to L2 acquisition).

The study to be described in this paper was guided by the notion that participants in natural discourse deploy strategies of various sorts in order to achieve their goals and be self-regulated. It is possible that all human discourse rests upon a universal base of interactional tactics (see House 1985). If so, achievement of proficiency in interactive discourse may be related to how well learners of a new language can verbalize such tactics. A special instructional device called the 'scenario' was developed in order to provide the means for students to enter into interactive discourse in the classroom (see Di Pietro 1987). The scenario allows students to seek personal solutions to problems of a social order that are neither language-dependent nor restricted to the conventions of a particular society. The discourse that results from their interactions can be evaluated with regard to the level of proficiency attained by each interlocutor. Students are not judged in terms of some idealized native speaker but rather as personal participants in a plausible interaction. The proficiency they attain in the target language becomes a measure of how well they are able to balance the three regulatory agencies.

Unlike the activities of the Natural Approach, the scenario allows for a rehearsal phase prior to performance of assigned roles and a debriefing phase afterwards. Roles are assigned to separate rehearsal groups and the agendas of these roles are kept secret from the other groups. With the start of the performance phase, a dramatic tension arises as each role player seeks to dis-ambiguate the agenda of the other and make adjustments to any game plan that might have been worked out in rehearsal. Role-players may abandon or modify their original game plans and improvise new strategies for achieving their goals. After the performance, students and teacher enter into a discussion of all matters that might have had some relevance to what was said by the role-players. As an alternative to the discussion, the teacher may provide a relevant reading or even make corrections in the discourse generated by the scenario. The latter option was chosen for the present study.

The subjects of the study were all enrolled in the second semester of the first year ESL course in the English Language Institute of the University of Delaware. Permission was granted to the author to take over two class periods separated by a week, in order to carry out both phases of the study. During the first class period, separate groups were assigned one of the following two roles of the scenario entitled 'Journey to the Past':

Role A: You work as a traveling salesperson and you are riding on a train. The person sitting next to you is very well-dressed. Since you sell clothing, this person may be interested in buying something from you. What will you say?

Role B: You are traveling on a train and are sitting next to someone who looks familiar to you. You realize that this person might be the one who once sold you an expensive TV set that stopped working after one week. It cost you much money to have it fixed and you did not have the chance to tell this person about your problem because he/she was no longer at the store when you returned. What will you say now?

Note that the agendas of the two roles are intentionally mis-matched. Role-player A is told only that B may be a prospective customer for her clothing store. Role-player B, on the other hand, has been informed that A may have been the salesperson who already involved him in a bad deal on a TV set. The two roles were rehearsed for about fifteen minutes in their separate groups and then a representative from each group was called upon to perform. The performance was video-taped and later transcribed with special attention paid to features of discourse. The key to these features is as follows:

- () compressed speech, with overfast delivery
- ==== overloud speech
- . . . hesitation; each dot represents about .5 seconds of silence
- uh hesitation filler; delivered with mid central vowel
- uhhh lengthened vowel of hesitation filler
- hmmmm bilabial nasal hesitation filler
- ↑ syllable following arrow delivered on overhigh pitch
- [] segments of speech delivered simultaneously by two or more individuals
- ┐ latching or rapid onset of speech

The performance went as follows:

- A: ↑Where're you going?
- B: Oh, I going to New York City. (How about you?)
- A: First, good, I have to pass in . in the New New York because I . I just returned to the country. You're ↑pretty today! Where you buy your clothes?
- B: Let me, let me . oh! . I remember that uhhh we meet . . in another time.
- A: Oh, I don't think.
- B: Oh yes! You sold me a (TV) a television set in a . . once . . time.
- A: No I don't [think so]
- B: [(You)] you remember in the last year . . . more or less in July . . . I went to the . . uhh . . Radio Shack store . . you worked there?
- A: Minute, please, just a minute (A goes to her group to consult and then returns)
- Sir, I think you're wrong because I . I . my job is [I am sure
- B: [I am sure
- A: No, no
- B: [because
- A: [You you] make a mistake you make a mistake because I I'm traveling sales . sales . [only sport]
- Teacher: [clothing]
- A: Huh?
- Teacher: clothing.
- A: only sales clothing . . OK? I I think you're you're . . y you're you're you're [I am sure
- B: because uh . uh . for your bad sold . I lost . so much . . money.
- A: No, no . . You're crazy . you are crazy . you are very crazy.
- B: Tell me . I . I tell about . . . I I told you about . my uh problem. When I bought the TV . . uh . . I lost . so much money because . the uh apparate . . . apparatus . . uh uh was very, [very] . . uh . . bad.
- A: [ohh] It's terrible. but I I sell only clothes. [I don't understand
- B: [When I I send you .
- A: ↑anything on TV, radios, I don't understand

- A: anything
- B: I I . . .
- A: I sell ↑ only beautiful clothes. OK?
- B: I am sure . . . youuuu . . .
- A: No.
- B: You send . . . uh uh . . . you sold me this apparatus.
- A: No, no. I I don't sell . . . I ↑ never sold (any) TVs and radios. I don't understand ↑ anything about . . .
- B: Really?
- A: Really. I am special. I understand only the special . . . OK? I know, I know what's the man dress now, OK? What the women uh can dress [now] but TV, radio I don't know . . .
- B: maybe you are a twins? (laughter follows) you have a sis(ter) . . .
- Teacher: You have a sister? You have a sister? What do you say to him. Tell him tell him
- A: OK! OK! uhuh I I my my my I have a big store, a big store, and hmmm uhuh I (sell) only beautiful clothes for men . . . you understand?
- B: But uh my question for you . . . (there) is a sister, someone similar to you?
- A: I don't think so . . . I am I am different for the other parents. I am Brazilian.
- B: Are you sure?
- A: Yeah . . .

The point at which the dramatic tension has its effect as a stimulus for creative manipulation of language is clearly marked. It comes right after B suggests that A worked in the Radio Shack store where he bought the defective TV set. A's reaction is to ask for time out while she consults with her rehearsal group. When she returns to the interaction, she embarks on a strategy to counter B's accusation. First she tells him that he has made a mistake and then, when he insists, she calls him 'crazy.' She goes on the defensive for the remainder of the interaction claiming that she knows only about clothing and is totally ignorant of TV sets.

The interaction is marked with many features that are common to discourse among fluent speakers of English such as overlaps, latched onsets and pausal phenomena. The lack of fluency is evident in the errors made in the artifact--i.e., the grammar--of English, e.g., inappropriate vocabulary, incorrect use of

prepositions and definite articles, lack of auxiliaries in interrogatives, incorrect sequencing of tenses, and faulty pronunciation and intonation. Despite their lack of control over grammar, the two role-players are able to engage in regulation. Each tries to regulate the other without being regulated in turn. The scenario exercise has allowed the students to rise above object-regulation even though they do not have command over the object. The next question to answer is: what happens when learners are given the chance to correct their errors in the grammar?

In the interval between the first performance and the second, the videotaped performance was edited by the author. Care was taken to produce a correct but faithful reproduction of the original performance, as follows:

- A: Where are you going?
B: To New York City. How about you?
A: I'm going to New York first. I need to stop off there because I've just returned to this country. You look handsome today! Where do you buy your clothes?
B: I seem to remember that we've met before.
A: I don't think so.
B: Oh, yes. You sold me a television set once.
A: No, I don't think so.
B: Do you remember last year, around July, I came to the Radio Shack store where you worked?
A: I think you're wrong because my job is selling clothes.
B: I am sure.
A: No, no. You're making a mistake because I'm a traveling salesperson. I only sell sport clothing.
B: I am sure because I lost a lot of money on account of you.
A: No, no. You're very mistaken.
B: Let me tell you about my problem. I lost a lot of money when I bought the TV because it was very defective.
A: Oh, that's terrible, but I sell only clothes. I don't know anything about TVs or radios.
B: But you sold me the TV.
A: I sell only beautiful clothes. I know what men are wearing now. I know what women are wearing. But I don't know anything about TVs and radios.
B: Maybe you are a twin? Do you have a sister somewhere who looks just like you?
A: I look quite different from my relatives.

A (continued): I'm from Brazil.

B: Are you certain?

A: Yes. There is no one like me in New York or anywhere else. Only in Brazil.

This corrected script was given to the original role-players at the start of the second class period, a week later. They were told that they could look over the script in order to 'refresh their memories' about what they had said and to practice for a little while. After approximately ten minutes, the two role-players were asked to re-perform their scenario. A transcription of that second performance follows:

A: Good morning. How are you?

B: Fine, fine.

A: I'm fine! Where're you going?

B: To New York City, uhh hmmm how about you?

A: Ohhh at first I'm going to New York because I . . . just . . . I've just uhh (re)turned to this country uhhh but you're very handsome todayyy . . . where're you buying your clothes?

B: Ohhh let me . . . hmmm I seemed to remember uhhh we've meet before.

A: Noooo, I don't think so.

B: I am sure.

A: No, I don't think so.

B: Do you remember . . . last year around July . I . . . came to (the) Radio Shack where you workèd?

A: I think you making . made a mistake because I ooonl . . . I sell only clothes. I am a traveling uhhh traveling person woman.

B: I am sure because I . . . lost a lot of money account of you.

A: No, I don't accept anything about TVs or radios. I am only a sale . . . some clothes . sport clothes.

B: Let me tell you uhh when I uh bought the (TV) I loss uhhh lot of money because the TV was uhhh defective.

A: It terrible I know but . I'm never sell . . . TVs or radios. I only sells clothes. Look at (your) shoes. I think you need to change your shoes. These [shoes

B: [(These are nice shoes)] the last year's

A: styles. The winter style.

B: uh but uh right now, I (don't need) any . . . clothes.

A: ahhh but if . you . see . my . clothes . . it's wonnnnderful. I think you're . you need . to buy something.

B: But I suppose uhhh you . . store is (very ex)pense.

- A: No, don't worry about the price. Its very very cheap. [It have a lot] of kind of fashions.
- B: [uhhh] That's too bad because . . right now I only need a . a . recuper recup (my) money.

The improvement in grammatical correctness and vocabulary choice is considerable in this second performance. An even more marked improvement over the first performance is noted in the relatively unbroken flow of discourse for three-quarters of the interaction. The absence of overlaps and latchings in this segment would seem to imply that the two students had made great strides in conversational English. However, such a conclusion might be too hasty. It is to be remembered that the two students are following a script in the second performance. The absence of overlaps and latchings points to a staged quality when contrasted with the naturalness of the first performance. Interpreted within the framework of the theory of regulation, the second performance is object regulated. The students are not engaging in either other or self regulation, that is not until A makes a departure from the script and has another go at regulating her interlocutor. This departure is marked with A's criticism of B's shoes. B moves quickly to defend himself. 'These are nice shoes,' he says, overlapping with A's continued commentary about how outdated his footwear is. A's new line of attack becomes more evident as she suggests that B needs to buy new clothes. B supposes that A's store is very expensive but A reassures him, telling him not to worry about the price.

This final portion of the second performance is very much like the first performance in terms of its execution. The overlaps reappear and the delivery is more natural. The two players are, once again, talking in earnest, A as the salesperson and B as the wronged party in a past transaction. The evidence for advancing acquisition is to be sought not in the textbookish discourse of the two students in the first part of their second performance but in how well they controlled elements of English grammar in the latter portion of it. With the new tactic introduced by A, the same conditions of dramatic tension are carried over from the first performance. While the improvements in the latter portion of the second performance are not as spectacular as those of the earlier portion, they are more significant because they are linked to speaker intent.

A finer-grained analysis of the two discourses would most certainly reveal more features to consider in terms of L2 acquisition. However, several points brought up earlier in this paper can be reconsidered in the light of what has been found in this study. First of all, the scenario is capable of promoting L2 discourse in ways that are not equaled by any other technique now being used in L2 instruction. Unlike Krashen's approach, the scenario does not rely on drills and exercises dealing with specific features of conversational management. To do so would promote object regulation at the expense of both other and self regulation. Truly interactive discourse must allow for all three regulatory agencies to function. The rehearsal phase and the debriefing where correcting is done represent departures from the Natural Approach of Krashen and Terrell. Conscious attention to formal matters does not constitute a disadvantage and, indeed, may give some positive results. It must be pointed out, however, that the approach to language form is very different from that of the Natural Approach or even the more traditional approaches. In the methodology built around scenarios--called Strategic Interaction--grammar arises from the concerns of the learners, themselves, rather than as a result of a pre-ordained and programmed syllabus. In this way, whatever is said about language form and function is in a context that is immediately understandable to the learner. The corrected script supplied to our role players provided grammatical guidance in the context of their own utterances. It may well have been this guidance that gave our role players the confidence to depart from the script and return to an interplay of strategies. Finally, this study does not support the distinction made between learning and acquisition. While it is possible that unconscious learning--if acquisition can be defined as such--goes on in some fashion unlike that which results from conscious instruction, the extent to which the two modes differ is not clear. In any event, the instructor's control should extend over tasks that enhance both types of learning. Without a doubt, humans possess a body of psycho-social skills that can be employed to build proficiency in a new language but how this connection comes about and how people are able to perceive the strategic worth of utterances are questions still to be answered.

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An Analysis of Child Language as a Test of the Systemic Theory of Circumstantial

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¹1. Introduction. Although a great deal of research in the past has been concerned with child language, few studies have been conducted using systemic linguistics as a theoretical basis.¹ This study employs systemic theory to evaluate the expression of circumstantial meanings in child language. Halliday (1985) deals with circumstance in the ideational component of his functional grammar where he treats the clause as representation. This part of his theory will be used to analyze a sample of child language consisting of four conversations, each of which involves three children. From this meeting of theory and data, we can hopefully gain a better understanding of both.

The conversations evaluated come from Fawcett and Perkin's Child Language Transcripts (1980). Fawcett and Perkins have recorded and transcribed conversations of six, eight, ten and twelve-year-old boys and girls representing four social classes. The subjects are organized into homogeneous groups, each made up of three children of the same sex, age, and social class. They are recorded in short unsupervised play sessions centering around building with Lego building blocks. Each child is then interviewed by an adult in a recorded session. Four units of Fawcett and Perkin's extensive data are considered here. These include the play sessions of six and twelve-year-old boys and girls of low socio-economic class. This investigation will look for age and gender based differences in the ways in which children express circumstantial meanings.²

2. The Concept of Circumstance in Systemic Linguistics. Within systemic functional theory, much study has been done in certain areas of semantics. Transitivity and modality, for example, have been studied fairly extensively, as have process types and participant roles. That area of semantics that deals with circumstantial elements within the clause has been somewhat neglected by comparison. Halliday (1985) gives the most complete treatment of circumstantial meaning. Fawcett (1980) gives a brief sketch. Berry (1975) and Butler (1985) devote a few sentences to the topic or ignore it completely.

Outside of systemic theory proper, Quirk et al. (1972) devote almost an entire chapter to adjuncts, which they describe as the units that realize adverbial functions within the clause. This is somewhat similar to a systemic understanding of circumstantial adjuncts. Although Quirk et al. do not purport to represent a systemic viewpoint, their approach is not incompatible with

systemic theory in that their grammar emphasizes semantic functions more than syntactic structures.

In Halliday's systemic treatment, which will be followed here, a process has three semantic components (Halliday, 1985:101):

- 1) the process itself;
- 2) participants in the process; and
- 3) circumstances associated with the process.

The process is usually realized as a predicate, the participants as complements, and the circumstances as adjuncts. Circumstantial meanings involve 'Extent and Location in time and space, including abstract space; Manner (means, quality and comparison); Cause (reason, purpose and behalf); Accompaniment; Matter and Role' (Halliday 1985: 137). These meanings are usually realized syntactically within the clause rank by adjuncts, which are in turn filled by adverbial groups or prepositional phrases. While prepositional phrases function most often to fill an adjunct constituent which realizes circumstantial meaning, they may also fill complement constituents which realize participant roles, e.g. the agent in a passive clause is realized by a prepositional phrase beginning with 'by'. Distinguishing between these two uses of prepositional phrases is not always a straightforward task.

A basic difference between a circumstantial element and a participant to Halliday is that a participant can serve as the subject of the clause, while a circumstantial element cannot. This, for example, is the grounds that he uses to distinguish the circumstantial element he calls 'Behalf' from the participant he calls 'Beneficiary' (Halliday 1985: 140). He cites 'for her children' (i.e. 'for the sake of her children') in the sentence 'She gave up her job for her children.' as an example of the circumstance of Behalf. It is not possible to make 'her children' the subject of a passive sentence as in *'Her children were given up her job.' or to express the relationship without the preposition 'for' as in *'She gave up her children her job.' However, 'for her children' is cited as an example of the Beneficiary participant in the sentence 'She built a home for her children.' A passive with 'her children' as subject is possible, as in 'Her children were built a home.' Also, the relationship can be expressed without 'for' as in 'She built her children a home.' Behalf and Beneficiary, as he points out, however, involve similar semantics even if the circumstance-participant distinction can be made on syntactic grounds. In other places he recognizes the semantic similarity between the Extent circumstance and the Range participant, and between the Means circumstance and the Agent participant. It seems, then, that circumstantial meaning cannot be easily and naturally isolated in clausal adjunct realizations. Circumstantial meaning can be realized along with participant meaning in complements as well.

Not only does Halliday fail to maintain a neat boundary between circumstantial and participant semantics, he also fails to maintain a boundary between circumstantial and process semantics.

For example, he analyzes verbs such as 'followed' in 'Applause followed her act' as an example of Circumstance as Process (Halliday 1985: 126). He recognizes then, that although circumstantial meaning is often expressed in adjuncts, its expression is not limited to adjuncts. Circumstantial meaning can also be expressed along with participants and processes in predicates and complements. Another area where he recognizes a blurred boundary between circumstance and process involves phrasal verbs such as 'look at' (Halliday 1985: 143). A sentence such as 'Look at the sky' can be analyzed either as the process 'look at' plus the participant 'the sky' or as the process 'look' plus the circumstance 'at the sky.'

Halliday, then, identifies several areas of circumstantial meaning. He would like to avoid overlap by isolating the realization of these meanings in adjuncts away from participant and process realizations at the clause rank. Such isolation is elegant, but in light of the previous discussion seems semantically artificial. It seems that systemic theory, being an approach that emphasizes semantics above syntax, needs to address this issue in order to further develop its explanation of circumstance. Halliday does begin such an explanation of the semantics of time circumstantials as realized in the predicate and as realized in adjuncts when he demonstrates how tenses in the verbal group are mirrored by time adjuncts (Halliday 1985: 179). This train of thought, however, is not followed out, and Halliday does not fully explore the role played by circumstantial meanings in all parts of the clause. Analysis of data such as that considered in this paper should help us further our understanding of the ways in which circumstantial meanings are expressed.

3. Circumstantials in child language data. This study investigates two topics in the data. First, it is concerned with discovering sex based differences in the manner in which circumstantials are used in the children's speech. Second, it looks for developmental differences that would distinguish the speech of six-year-olds from that of twelve-year-olds.

The analysis proceeded using Halliday's model. His suggested probe questions and grammatical descriptions were used to identify circumstantials. For example, he suggests the probe 'How?' and a realization as an adverbial group or a prepositional phrase beginning with 'by' or 'with' as a way to identify a circumstantial element of Manner-Means. In using this technique with this particular data, we did not find it necessary to analyze circumstantials to the full degree of delicacy that Halliday provides. For example, the location circumstance was not subclassified into definite, indefinite, rest, and motion categories.

Halliday's description was helpful as far as it went. It left some questions unanswered, however. For instance, distinguishing between circumstance realized as adjunct and circumstance realized as complement can be difficult. The probes Halliday gives distinguish only between the various types of circumstantial meanings. They provide no help in distinguishing

adjuncts and complements, both of which can be filled by prepositional phrases and adverbial groups. Quirk et al. (1972) and Steiner et al. (forthcoming) were more helpful, offering practical tests for distinguishing adjuncts from other entities such as disjuncts, conjuncts, and complements. An 'elimination' test, for example, involves deleting a suspected complement from a sentence. If the sentence is anomalous after the deletion, then the deleted item is considered to be a complement. By this test, 'in the garage' in 'That goes in the garage' is analyzed as a complement. Tests such as these supplement Halliday's explanations, but even so, no one of these tests works in all cases, and some involve subjective judgments.

Another difficulty lay in distinguishing between circumstance realized as adjunct and circumstance realized as predicate in the case of multi-valent and phrasal verbs. Halliday provides no clear guidelines. 'There will often be doubt about whether these complex lexical items can be interpreted grammatically as a single process or not. In such cases it is important to consider the transitivity of the clause as a whole, to see whether it appears to be structured as a process plus participant or process plus circumstance. Whichever gives the more coherent overall picture is the one to be preferred.' (Halliday 1985: 186-87). Quirk et al. likewise has failed to resolve this issue satisfactorily. Alternate analyses of the sentence 'Look at the sky' have already been mentioned in illustration of this point.

Because circumstantial meaning is realized not just in adjuncts, but in participants and process and because of the difficulties encountered in distinguishing among these realizations, we have chosen to count circumstantials as complements as well as circumstantials as adjuncts. We have limited the delicacy of the space and time circumstantials, distinguishing only between location and extent. We have also limited our study in two additional ways: in the analysis of the data, we have not formally counted the circumstantials realized as process; and in the presentation of the data, we have chosen to present only the totals of each play group rather than including the figures for all twelve individual children. This last decision was made because the individual variations among children were often greater than those among the age or sex groupings.

The results are presented in tabular format in Figures 1 and 2. The six-year-old boys had a total of 40 circumstantial adjuncts and the six-year-old girls, 22. Twelve-year-old boys also had 40 circumstantial adjuncts, and twelve-year-old girls, 50. Age does not appear to be a factor for boys although it does for the girls. Among the younger children, the boys had almost twice as many circumstantial adjuncts as the girls. With age, the girls outnumber the boys slightly. However, individual differences within the same sex and age groups were greater than the differences among them. For example, one twelve-year-old boy used only six circumstantial adjuncts compared to 23 by another. One six-year-old boy used only three compared to 24 by another six-year-old.

Figure 1
CIRCUMSTANTIALS AS ADJUNCTS

	6 yrs boys	6 yrs girls	12 yrs boys	12 yrs girls	all ♂ 6 & 12	all ♀ 6 & 12	all 6 yrs ♂ & ♀	all 12 yrs ♂ & ♀
Space-Loc.	17	11	18	23	35	34	28	41
-Ext.	0	0	1	4	1	4	0	5
Time -Loc.	6	2	13	6	19	8	8	19
-Ext.	4	0	0	2	4	2	4	2
Manner-Means	2	5	1	4	3	9	7	5
-Qual.	2	1	1	2	3	3	3	3
-Comp.	1	0	1	0	2	0	1	1
Cause-Reason	3	1	0	0	3	1	4	0
-Purpose	4	2	3	5	7	7	6	8
-Behalf	1	0	0	0	1	0	1	0
Accomp. -Com.	0	0	0	2	0	2	0	2
-Add.	0	0	1	0	1	0	0	1
Matter	0	0	1	1	1	1	0	2
Role	0	0	0	1	0	1	0	1
TOTALS	<u>40</u>	<u>22</u>	<u>40</u>	<u>50</u>	<u>80</u>	<u>72</u>	<u>62</u>	<u>90</u>

Figure 2
CIRCUMSTANTIALS AS COMPLEMENTS

	6 yrs boys	6 yrs girls	12 yrs boys	12 yrs girls	all ♂ 6 & 12	all ♀ 6 & 12	all 6 yrs ♂ & ♀	all 12 yrs ♂ & ♀
Space-Loc.	15	17	17	30	32	47	32	47
-Ext.	0	0	4	3	4	3	0	7
Time -Loc.	1	0	0	0	1	0	1	0
Ext.	0	0	1	0	1	0	0	1
Manner-Means	0	0	0	1	0	0	0	1
-Qual.	0	1	0	0	0	1	1	0
-Comp.	0	0	0	2	0	2	0	2
Cause-Reason	0	0	0	0	0	0	0	0
-Purpose	9	0	1	2	10	2	9	3
-Behalf	0	0	0	0	0	0	0	0
Accomp. - Com.	0	0	0	0	0	0	0	0
- Add.	0	0	0	0	0	0	0	0
Matter	0	0	0	0	0	0	0	0
Role	0	0	0	0	0	0	0	0
Totals	<u>25</u>	<u>18</u>	<u>23</u>	<u>38</u>	<u>48</u>	<u>55</u>	<u>43</u>	<u>61</u>

The spread among the girls was almost as broad; 12 to 21 for twelve-year olds and four to twelve for six-year-old girls. This pattern held true for circumstantials realized as complements. The younger boys outnumbering the younger girls and the older girls outnumbering the older boys. Here too, individual differences within age and sex groups exceeded those among the groups.

The last four columns in Figures 1 and 2 compare the data for all children of the same age, regardless of sex and for all children of the same sex, regardless of age. Looked at this way, the number of circumstantial elements realized as either adjuncts or complements are about the same between the sexes. However, age does appear to present a difference. There is a 3:2 ratio in favor of the older child, either male or female, in the total usage of circumstantials whether realized as adjunct or complement.

Although individual variations accounted for what appeared to be significant differences between the sexes, it still did not help to explain the very low counts for the six-year-old girls. This was resolved when the number of utterances was counted, the Mean Length of Utterance calculated and both of these used as an additional basis of comparison. (Figure 3) Utterances were counted using criteria similar to those Steiner et al. used on the same data. An utterance consisted of an independent clause along with all of its dependent clauses and tag questions. Nominal groups such as 'the blue ones' and 'bus stop' were also counted as utterances. Turns were not counted if they consisted only of empty phrases such as 'Right'. False starts, anacolouthons, expletives and items within parentheses (indication that the transcriber was unclear) were not counted. Ellipses were counted if the referent was in the immediate linguistic context. This was defined to include both the speaker's immediately preceding utterance or any immediately preceding utterance by another speaker. Repetitions were not counted. Mean Length of Utterance was calculated using criteria similar to Brown's (1973).

The number of utterances for six and twelve-year-old boys was almost the same, 220 and 224. For six and twelve-year-old girls, the range was much greater, 158 and 257. This low number of utterances for six-year old girls is the biggest factor in explaining what on first appraisal appears to be a significant contrast in the use of circumstantials. The ratio of total circumstantial elements to the total number of utterances for six-year-olds was 30% for boys and 25% for girls. The totals on the right side of Figure 3 show how very little difference there is between either age or sex in the usage of circumstantials. The total number of utterances for all boys as compared to all girls is 444 to 415. The M.L.U. for boys, regardless of age was 5.23 and for girls, 5.16. As a percentage of their conversations, the usage of all circumstantials involved 29% of the boys' utterances and 31% of the girls'. The difference between age groups was greater for number of utterances, the younger children having only 378 to 481 for the older children. The difference in M.L.U's was not as great, 5.12 for six-year-olds and 5.26 for twelve-year-olds. As a percentage of their conversations, circumstantials of both adjuncts and complements,

Figure 3

CIRCUMSTANTIALS AS A PERCENTAGE OF TOTAL UTTERANCES

	6 yrs boys	6 yrs girls	12 yrs boys	12 yrs girls	all ♂ 6 & 12	all ♀ 6 & 12	all 6 yrs ♂ & ♀	all 12 yrs ♂ & ♀
Total Utter.	220	158	224	257	444	415	378	481
Total Morphemes	1209	728	1115	1417	2324	2145	1937	2532
M. L. U.	5.50	4.60	4.98	5.51	5.23	5.16	5.12	5.26
# Circum. Adjuncts	40	22	40	50	80	72	62	90
Circ. Adj. /Utter.	.18	.14	.18	.19	.18	.17	.16	.19
#Circum. Compl.	25	18	23	38	48	56	43	61
Circ. Compl. /Utter.	.11	.11	.10	.15	.11	.13	.11	.13
Total All Circ.	65	40	63	88	128	127	105	151
All Circ. / Utter.	.30	.25	.28	.34	.29	.31	.28	.31

were 28% of the six-year-old utterances and 31% of the twelve-year-olds utterances. In Figures 1 and 2 it had appeared, using only the absolute numbers, that older children used more circumstantials than younger children, in a ratio of 3:2. However, this discrepancy smoothed out when circumstantial elements were compared as a percentage of the total number of utterances.

The analysis of the types of circumstantials used and whether these were realized as adjuncts or complements provided much more interesting contrasts than that found between age and sex groups. Circumstantials of Space outnumbered those of all other types 160 to 95. (It could be argued that the results of this study were strongly task constrained i.e. building with Lego. An examination of the interview sessions for these same groups could resolve this issue.) Individual differences, rather than sex or age appeared to play a more important role in the usage of other types of circumstantials: circumstantials of Time appeared a total of 34 times, those of Cause 32, and Manner 23. Again, regardless of age or sex, circumstantial elements were realized as adjuncts 152 times, as complements 103. Circumstantial adjuncts comprised 18% of the total utterances as compared to circumstantial complements with 11%.

Since circumstances of space outnumbered all others, we analyzed the data to see how these would be realized, either as complements or adjuncts. Circumstantial elements of location are realized as adjuncts in 9% of all utterances (disregarding age and sex) and similarly as complements in 10%. All other types of circumstantials are realized as adjuncts in 9% of the utterances but as complements only 2%. The ratio of space to other circumstantials realized as adjuncts is 1:1. However, the ratio of space to other circumstantials realized as complements is 5:1.

This study illustrates some of the problems in applying systemic theory to actual data. For example, if frequency of circumstantials is to be a measurement and if systemic theory is used to define circumstance, then there is a problem in deciding what to count. Although we did not formally tabulate phrasal verbs (circumstance as predicate), they were informally counted in the data for twelve-year-old boys. The number of circumstantials in this play session of 224 utterances would number 40, 63 or 96 depending on whether circumstance as adjunct only, circumstance as adjunct and complement or circumstance as adjunct, complement and predicate were counted.

4. Conclusion. This study was undertaken in an attempt to answer two basic questions. The first of these was whether age or sex could act as factors affecting the use of circumstantials. The answer is 'probably not'. The ability to place objects and events in space linguistically and to code the other types of meaning associated with circumstantials is demanded of any speaker regardless of sex. Age-based differences would, of course, be expected in younger children, but it would appear that circumstantial elements are mastered relatively early.

The second major question addressed was that of whether application of systemic theory to the data might lead to insights

as to the role of circumstantials within the theory. We have seen that the systemic theory of circumstantials is most fully developed in the area of adjunct realizations. That circumstantial meanings are also realized in predicates and complements is recognized but not fully addressed. In the child language data, circumstantials are indeed expressed in all parts of the clause, and the number expressed outside of adjuncts is too great to ignore if the theory is to retain semantic integrity. Both the quantity and variety of circumstantials expressed, however, are greatest in adjunct realizations. As we have seen, the full variety of circumstantial meaning is not well represented in complement realizations. Complement realization is practically limited to spatial circumstance. Observations such as these suggest that the circumstantial system is sensitive to the complement/adjunct distinction, even though it is not neatly bound by it. Systemic theory, then, has begun in the right place in considering circumstantial realizations, but it still has room to grow.

Notes

¹We would like to thank Erich Steiner of the University of Saarland for ideas and comments helpful in the development of this paper. All mistakes, however, are our own responsibility.

²Scott's study (1984) is similar to ours, the main difference being that it deals with adverbials outside of clause structure in disjuncts and conjuncts, while ours deals with adverbials inside of clause structure. Scott's work is also based on the Fawcett-Perkins transcripts. She does not use systemic grammar as a theoretical starting point but refers instead to Quirk et al. (1972), an English grammar very helpful to us as well owing to its thoroughness and semantic orientation.

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The Language Learnability Theorem Revisited

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In order for human beings to be able to acquire natural language, they must be born with certain abilities and they must learn certain things about their particular language. What is the human being born with, and what are the built in learning mechanisms? This issue has influenced linguistic theorizing for over two decades, and its importance is growing. This paper will suggest that generative grammarians have been very strongly influenced by a mathematical theorem, now 20 years old, by E. Mark Gold. It will then go on to argue that the dilemma posed by the theorem can be resolved in a way quite different from that chosen by generative grammarians.

First, it is appropriate to provide some background information, which, no doubt, will be familiar to most of you. Back in the '50s Chomsky described types of formal languages in terms of a hierarchical set (Chomsky 1956, 1959, 1963). This set has since been named the Chomsky hierarchy.

The simplest type of language is one with finite cardinality. That is, it has a finite number of possible sentences. Such a language can be produced by a finite state device which contains no loops.

The next more powerful language in the hierarchy is a regular language. A language is a regular language if it can be generated by a finite state device which may contain loops.

Next up on the hierarchy is a context free language, which can be generated with a finite state device attached to a single pushdown stack of unlimited depth. The finite state device is limited to adding an item to the top of the stack or reading the topmost item on the stack. In order to read the next item down, the top item is lost.

Next up on the hierarchy is a context sensitive language. Such a language can be generated by a finite state device attached to a single pushdown stack in such a way that it can read items below the top of the stack. It cannot add new items in the middle of the stack, however.

The most general language is the recursive language. This can be generated by a finite state device with two pushdown stacks. This is equivalent to having one stack and being able to add information in the middle of the stack.

It has been argued that natural language must be a language very high on the hierarchy of languages, because it was thought to contain sentences which are centrally embedded to an arbitrary depth. If true, then natural language must be at least context free. But language also was thought to contain "respectively" constructions of arbitrary length. For example, "John, Jim, Jerome, and George love Sue, Shirley, Sally and Samantha respectively." If true, then natural language must be at least context sensitive. In addition, coordination seems to be a very powerful system within language, difficult to formalize in any grammar with less than recursive power.

The notational system originally chosen by Chomsky, transformational grammar, was the most powerful, being able to generate recursive languages.

This view of language was shaken to the core by Gold's (1967) paper, "Language identification in the limit." In this paper Gold discussed the mathematical nature of language learning devices. A language learning device receives example strings, on the basis of which it chooses a grammar that fits its input. The mathematical analysis depends upon several crucial formally defined concepts.

The first one is learnability. A language is learnable if there exists a time t after which two things are true: new examples of the language do not require the currently hypothesized grammar to change, and the grammar is correct.

The second concept is to differentiate between two different methods of presentation of examples of the language. One method consists of presenting good instances only. Every presentation is that of a correct sentence. Let us call this method A. The other method consists of presenting both good and bad instances and labelling them so that the language learning device knows which is which. Let us call this method B.

The third concept is that the language learning device includes a grammar generating device. Such a device suggests a grammar that is compatible with the data presented so far.

The fourth concept is that the language learning device includes a checking routine. Such a device can check a given example and determine if it can be generated by the grammar currently under consideration.

Given these concepts, Gold was able to arrive at the disturbing conclusion that only languages with finite cardinality can be learned with method A. Regular, context free, and context sensitive languages can be learned with method B but not with method A. Recursive languages cannot be learned at all. In other words, the transformational grammars proposed by linguists were unlearnable.

There are a number of possible ways one can respond to the theorem. One response is to reject the theorem out of hand. One can argue that formalism is all a waste of time; that the goal is to communicate language description to people, not formal language learning devices. Thus formal theorems are not relevant or interesting and can be ignored. This approach has been taken either consciously or unconsciously by many linguists.

Another approach is to search for a mathematical flaw in the proof. So far, Gold's theorem has stood the test.

Another approach is to claim that human languages are finite. One can place an upper limit to sentences based on the finiteness of the human lifespan. No sentence will be produced that takes longer than 100 years to utter. While this is true, it is a deeply unsatisfying way out, because it doesn't account for the productivity of language. One can present a never-before-heard string of words to someone and obtain a definite opinion as to whether that string is or is not in that person's language. Language is clearly not just a memorized list of sentences.

If we reject the above three responses, then we must come to terms with the theorem in other ways. At the very least, transformational grammars are too powerful to be learned. In the last twenty years much linguistic theorizing has gone into attempting to limit the transformational component of language in

such a way that language becomes learnable.

The most radical approach is that currently espoused by Chomsky. Essentially all grammar is built in — language is an organ, like the liver or spleen. All human languages are almost identical. There exist only a finite number of minor, superficial differences. These superficial differences, being a finite set, are learnable. Although he does not quite admit that his earlier formulation was destroyed by Gold's theorem, Chomsky does point out that his current theory avoids the problems raised by mathematical linguists (Chomsky 1981: 233). In its current state of development, this model is not in complete enough form to determine whether it will work.

Chomsky's is not the only approach among the generativists. In the last few years this issue has attracted an increasing amount of interest. The more important contributions can be found in four books: *The logical problem of language acquisition* (Baker & McCarthy 1981), *Formal principles of language acquisition* (Wexler & Culicover 1980), *Language learnability and language development* (Pinker 1984), and *The grammatical basis of linguistic performance: Language use and acquisition* (Berwick & Weinberg 1984). At least according to the reviews of these books that I have seen (Baker 1982, Berwick 1982, Cooper 1985, Goodluck 1982, Johnson 1983, Marshall 1983, Pinker 1981), it appears that none of the approaches advocated in these readings is complete or generally acceptable. However, some are in better form than Chomsky's own proposals; they do show progress down one path to extract linguistics from the bind imposed by Gold's theorem.

There is, however, another path to take with regard to Gold's theorem. A mathematical theorem makes a statement about reality only to the extent that its assumptions fit reality. Thus if it were found that the assumptions do not fit reality, the theorem becomes irrelevant.

For example, Chomsky claimed to have proved that English is not a Regular language because Regular languages cannot generate sentences embedded to an arbitrary depth. But in 1969 I argued that English does not contain sentences that have arbitrary central embedding. Although there are a few counterexamples to my claim that there is a maximum of one embedding, and that greater embedding does occur in German literature with some regularity, my claim that there is a finite limit has not been refuted. Thus Chomsky's mathematical proof is rendered moot. Within relational network grammar theory, it is possible to describe natural language with formal tools equal in power to a Regular grammar.

Can the same form of argumentation be applied to Gold's theorem? I believe it can. In this regard, I wish to discuss two of his assumptions in more detail.

Recall that Gold investigated two methods of presentation. Under method A, the language learning device receives only positive instances of the language, while under method B, the device receives negative instances so marked. The theorem would not have caused such consternation if it was felt that method B corresponded best with reality, because under method B languages as powerful as context sensitive languages are learnable. For example, a language of the type proposed by relational network theory can be learned. However, it is generally thought that in fact children receive only positive instances of the language. Newport (1976), for example, claims to have found that adult-to-child

language is almost entirely error free.

If children do not receive negative instances from their parents, clearly they generate them themselves. Thus if these negative examples are marked as such by their parents, method B applies. However, Brown & Hanlon (1970) claim that parents do not respond to children's syntactic errors, but rather they respond to their semantic content. Thus it appears that children do not receive the negative examples so marked that method B requires, and so are limited to learning only a finite set of language facts via method A.

Let us explore this issue more deeply. In adult-child conversational interaction there is a prevalent phenomenon known as expansion. Expansion describes the case in which a child produces an utterance and an adult repeats the utterance, making it more adultlike by adding additional words or inflectional endings. A certain percent of the time children will then respond by producing the expanded version themselves. It is not known, but it is possible that this phenomenon of parental expansion is universal. This would supply the missing negative example input. At least some of the time, when children produce a defective utterance, their parents will correct it, thus informing the child that the utterance was a negative example.

Another proposed source of negative information is signalled by a lack of understanding of a child's utterance by an adult. Taken together, it appears that children might, after all, receive language via type B method of presentation.

The trouble with this is that the negative examples all originate from the language learners. The reason that this is a problem is that there exist populations of children that cannot talk but can hear, learn, and understand language. These include children born with cerebral palsy and with other syndromes that cause oral-facial paralysis. After years of hearing language but not being able to produce it, some of these children were given a means of alternative communication - computers containing words accessible by a few keystrokes. In such situations, these children showed a knowledge of language that appears to go beyond what one might expect if child-generated negative examples were necessary to language acquisition.

To support our hypothesis of the existence of linguistic examples marked as negative, we must look for another source of these negative examples. There is one possibility that has occurred to me. As other people talk, we follow what they say, and can often predict what word will come next. To the extent that people do this, they could arrive at negative examples when their silent shadowing deviates from what the speaker actually produces next. Interpreted naively, this technique would produce many false negatives, simply because the speaker said something that the listener did not predict. However, a more sophisticated analysis could reduce false negatives. Such an approach would predict parts of speech rather than particular vocabulary items, including multiple predictions any one of which would yield an affirmative. This is something that a handicapped individual could still do.

Whether you buy this alternative or not, there is another way in which Gold's assumptions can be attacked. The proof crucially involves the concept that a language is learned in the sense of a theorem; namely, there exists a stopping point, and there exists a correct grammar which people learn.

I claim that in this sense natural language is not learned. Specifically, there does not exist a stopping point after which no new language is learned. This is true whether you interpret language to include or exclude vocabulary. I doubt that there will be much disagreement that vocabulary is added throughout life. Indeed, the English language itself is constantly adding new vocabulary, and it is not just children who are learning and using it.

More contentious is the notion that the remaining structure of language — syntax, morphology, phonology, pragmatics — continues to change. Back in the '60s McNeill (1965) and others argued that all syntax is learned between the ages of one-and-a-half and three-and-a-half. In 1969 Carol Chomsky demonstrated that grammar was still being learned between the ages of five and ten. More recently, studies have found grammatical development up through the teenage years (e.g. Omar 1973). In each of my two marriages I have found myself absorbing the dialects and style of my spouse. Meanwhile, the language is changing around me. The productive construction "Verb + in" entered the language — *sit-in*, *sleep-in*, *laugh-in*, and so on. Since I left Michigan and moved to Canada, either my phonology has changed, or that of my Michigan colleagues has. I notice a definite drawl that they have that I didn't notice when I lived there!

One can argue against the concept that a language is not learned in the sense of Gold in another way as well. I contend that there does not exist a correct grammar which everyone speaking a dialect learns. Again, we may investigate this claim both including and excluding vocabulary in the concept of language. If we include vocabulary, I have collected evidence that each member of a family has meanings for many words which differ from those of other members. Either we must talk about the north bedroom and the south bedroom dialect, or the top bunk and the lower bunk dialect, or we must admit that no two people have the same language. If we exclude vocabulary, I have no systematically collected data, but at almost every linguistic meeting, some talks come with a handout with lists of grammatical and ungrammatical sentences, and inevitably someone in the audience comments that they disagree with the placement of asterisks. The dialogue that follows often involves trying to establish that the speaker and the questioner come from different dialect regions. But at one LSA meeting I attended it turned out that both had come from the same neighborhood in Philadelphia!

We all know about idiolects, but we ignore their implications. No two people have the exact same language. No child, even in a single parent family ever ends up with the same language as his or her parent.

Thus Gold's theorem, though interesting, is based on definitions and assumptions that do not appear to be valid for natural language. This being the case, the conclusions of his theorem do not apply to the real world. This means that we do not need to follow the route of Chomsky and assume that everything is built in. However, even though the theorem doesn't strictly apply to natural language because of the inapplicability of the definition of learning, it is obvious that a recursive language is more powerful than necessary. It would probably be best if generativists left their recursive notational system and moved to a narrower system such as relational networks, or a programming system which emphasizes less powerful generativity such as iteration, but I won't hold my breath.

While this paper will, no doubt, have no effect on the generativists' attempts to escape from Gold's restrictions, it perhaps may offer support to the majority of developmental psycholinguists who find the generative approach irrelevant to their ongoing studies of real children.

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METALINGUISTIC AWARENESS: THE SHADOW OF LANGUAGE

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Section 1: Introduction

There has been considerable linguistic study of metalinguistic awareness in adults, and much less attention given to the development of metalinguistic awareness in children and its relation to language acquisition. Examining metalinguistic awareness with an eye to its development in children is not only useful, for the perspective gained, but also charming, because Art Linkletter was right--kids do say the darnedest things. For instance, in a study by Gleitman et al. (1972), young children were asked to express acceptability judgments by saying "good" or "silly" in response to particular sentences. The idea was that "good" would imply a judgment of good grammar and "silly" a judgment of grammatical error. In response to the sentence, "Fill the mailbox," one two-year-old replied, "Silly," and offered the correction, "Put mail in the mailbox."

Most simply, metalinguistic awareness is one's awareness of language as an object in itself, and occurs when a shift is made from using language to viewing or addressing language. It is much like the shift from using a window for light or scenery to looking at the window itself. Expanding on the window analogy, language in use is often described as "transparent", while language viewed as an object is considered "opaque." Linguists, of course, endeavor to render language as opaque as possible, and use language transparently to do so.

This paper will first outline the current state of the study of metalinguistic awareness in children. Recent research is focussed primarily on children's awareness of three aspects of language--on their awareness of sounds, words, and syntax. The aim of this endeavor is two-fold: to determine how nearly metalinguistic awareness in children of various ages corresponds with metalinguistic awareness in adults, and to determine the relationship between metalinguistic awareness and reading readiness in preschool and school-aged children. Related to this research are several theories, currently the subject of much debate. Theoreticians question whether metalinguistic awareness is closely correlative with language, its development paralleling language acquisition per se, or whether it is relatively independent

of language, its development beginning in middle childhood, about the time formal schooling starts. Interestingly, the data support both contentions.

Following a brief review and critique of research on metalinguistic awareness in children, we will consider several points which lead to a new working definition of metalinguistic awareness. In particular, there are three types of evidence presented in the literature: what children produce spontaneously, what they consistently produce on demand, and what they can analytically explain. I propose that each type of evidence points unambiguously to one level of metalinguistic awareness. Thus, self-corrections and play point to language awareness, acceptability judgments to competence awareness, and logical explanations to analytical awareness.

Section 2: Current State of the Research

2.1 Brief review

Most of the work on metalinguistic awareness has been on awareness of sounds, words, and syntax. Examining each of these three areas in turn will provide insight into the aims and variety of research on metalinguistic awareness in children.

2.1.1 Awareness of phonology is considered to be more than the ability to discriminate speech. As Hakes expresses it, "A child who is quite well able to tell that 'cat' and 'bat' are different words need not be aware that each is composed of three segments and that only the first one differs" (1980, p.32).

Spontaneous evidence of phonological awareness comes quite early. For example, Bohn (1914) and Scollon (1976) report independently that children as young as 19 months will practice their pronunciation; Wier (1962) observed a 2-year-old practicing sounds and rhymes in bed at night; Smith (1973) and others report children discussing pronunciation by the age of two-and-a-half.

Research tasks designed to assess phonological awareness include tapping out the number of sounds in a word (Lieberman et al, 1974), representing successive sounds in a word with different colored blocks or counters (Caffee et al., 1973; Ehri and Wilce, 1980), and subtracting the initial phoneme to produce what's left (Caffee, 1977). Success in tasks at this level of difficulty is generally not achieved until after a year or so of school.

It is a methodological anomaly that many tasks designed to assess one ability require collateral abilities for successful completion of the task. For instance, responding to the question, "Does shoe rhyme with blue?" requires not only an awareness of rhyme but also the ability to register two arbitrary terms and

compare them, not to mention an understanding of the term "rhyme". Read (1978) has simplified the task of judging rhyme, embedding it in the story of a puppet named Sam who likes words that sound like his own name. Using this simpler methodology, he has found that children are well able to judge rhyme by the age of five, two years younger than had previously been thought. In a similar spirit, Calfee (1977) has simplified the task of subtracting initial phonemes and has thereby reduced the age of competent performance in this area also from seven to five.

The ability to explain phonological awareness in an analytical manner seems to be an adult competence, when it is developed at all. The naive speaker of English, for instance, would be hard put to explain why "blench" might be an English word while "bnench" is impossible, though he could state the fact of it with assurance. Furthermore, the nature, structure, and even the existence of the phoneme is subject to debate among linguists; an explanation of phonological awareness judged to be correct by some linguists would be considered faulty by others.

2.1.2 Awareness of words again implies more than the ability to communicate with them. Piaget (1926) indicates that the illiterate Gola of Liberia are ignorant of words, thinking in terms of phrases or whole sentences. Heeschen, working with the neolithic Eipo of New Guinea, reports that the natives exhibit considerable awareness of language, commenting at length about one another's verbal skill, yet finds that they are "uneasy and ... unsuccessful" in dealing with linguistic structure, including word forms (1978, p.176).

The simplest aspect of word awareness is "awareness of the word as a unit of language" (Bowe and Tunmer, 1984). Word substitution play occurs within a year or so of beginning speech (Bohn, 1914; Snyder, 1914; Weir, 1962). Typical research tasks are to count (Hall, 1976) or list (Karpova, 1966; Fox and Routh, 1976) the number of words in a sentence. Children do poorly on listing and counting words until well after starting school, which initiates their exposure to language in its printed form. Moreover, children's explanations of the number or listing of words in a sentence are clearly based on orthographic criteria.

Perhaps the most analytical aspect of word awareness is knowing what the term "word" means. Bohn (1914) and Slobin (1978) report correct usage of the term "word" in children at 21 months and at three-and-a-half years, respectively, though the children also misused the term at other times. Berthoud-Papandropoulou (1978), working with French-speaking children in Geneva, finds that preschool children think a word is something

that exists, like an egg, or something they say, meaning a sentence. Younger school-age children define a word as having enough letters, but not too many, specifically disqualifying articles. This confusion among children is not surprising, of course, given the various levels of "word"--orthographic, phonological, and so on--defined by linguists.

2.1.3 Awareness of syntax, extending beyond the ability to produce grammatically correct speech, implies the ability to make and explain judgments of grammatical acceptability. As with phonological awareness, spontaneous evidence of syntactic awareness appears quite early. Wier (1962) reports a two-year-old practicing syntax, Snyder (1914) reports a two-and-a-half-year-old repairing word choice and word order, and Clark (1978) notes that four-year-olds correct the grammar of younger siblings. Anomalously, Heida Slobin, at four years and three months, produced the proper adult forms for past tense when tested, but consistently used her own overregularized past tense forms in speech (Slobin, 1978).

Research into syntactic awareness generally involves presenting the child with carefully selected sentences one at a time, then eliciting the child's response. Findings from a number of researchers (e.g., Gleitman et al., 1972; DeVilliers and DeVilliers, 1972, 1974; Bohannon, 1975) indicate that children test poorly on judgments and explanations of grammatical acceptability until well into grade school. From ages two to three, children judge sentence acceptability on the basis of whether they understand the sentence. From four to five, they judge it on the basis of whether they like or dislike, believe or disbelieve what the sentence says (Nesdale and Tunmer, 1984). Syntax per se is used as the judgment basis only from about the age of six, and as the basis for explanation of acceptability judgments beginning a few years later (Hakes, 1980). It is worthwhile to note here that linguists routinely disagree about the acceptability of particular utterances, and that naive adult speakers are often unable to explain a judgment of grammaticality beyond stating that it just does or doesn't "sound right".

2.2 Theoretical framework

An examination of the theoretical framework for research into the metalinguistic awareness of children is in order, now that we have reviewed the aims and results of such research. The variety of individual views on the developmental course of metalinguistic awareness coalesce into two distinct hypotheses: the autonomy hypothesis and the interaction hypothesis.

The autonomy hypothesis "emphasizes the distinction between the initial acquisition of spoken language and the development of metalinguistic awareness" (Smith and Tager-Flusberg, 1982, p. 450). Most adherents of this hypothesis associate the development of metalinguistic awareness with the emergence in middle childhood of Piagetian concrete operational thought, or left-brain logic, while stopping short of claiming any causation in this relationship (Hakes, 1980). Others, however, suggest that it is formal schooling itself which stimulates the initial development of metalinguistic awareness (Donaldson, 1978). Evidence supporting the autonomy hypothesis lies in the major step-wise performance gain found in a number of tasks at about age six (Hakes, 1980).

The interaction hypothesis emphasizes mutuality between the ongoing acquisition of spoken language and the development of metalinguistic awareness (Smith and Tager-Flusberg, 1982, p. 451). The interaction view holds that children pay conscious attention to the task of acquiring language from the time they begin to speak, and that this conscious attention either stimulates or constitutes metalinguistic awareness. Evidence supporting the interaction hypothesis comes from both observational and experimental studies and covers a broad range of abilities and tasks.

Section 3: Discussion

3.1 Definition of metalinguistic awareness

In the literature reviewed, there is widespread agreement with the general definition presented earlier, that metalinguistic awareness is awareness of language as an object in itself. More specifically, metalinguistic awareness is defined by Pratt and Grieve as "the ability to think about and reflect upon the nature and functions of language" (1984, p.2), and by Tunmer and Herriman as "the ability to reflect upon and manipulate the structural features of spoken language" (1984, p.12). In these and other definitions, awareness is defined in terms of reflection and manipulation. Presumably for practical reasons, no allowance is made for the possibility of awareness without concomitant behaviors. It is important to recall, however, that awareness itself is an intangible, and may or may not manifest itself in measurable behaviors at any given time. The assumptions that awareness can be measured, and that defining it in measurable terms is appropriate as well as helpful, lend a subtle measurability bias to the whole of metalinguistic awareness research.

3.2 Definition of valid evidence

Working within this bias, the autonomy and interaction hypotheses each predicate a particular view of what constitutes valid evidence of metalinguistic awareness. Adherents of the autonomy hypothesis claim that awareness implies by definition the ability to articulate an analysis of one's awareness. Valid evidence thus begins at the level of accurate analytical explanation. While children's explanations of syntactic judgments are cited as evidence for the onset of metalinguistic awareness in middle childhood, the inability of most adult speakers to explain phonological awareness and word awareness is overlooked. If metalinguistic awareness is virtually unattainable in the adult population, measuring it in children would seem a futile endeavor.

In contrast, adherents of the interaction hypothesis claim that valid evidence for metalinguistic awareness is represented by any speech act not intended purely for communication. Valid evidence thus includes phonological practice and word play, and also any speech act which exhibits monitoring in the form of corrections or repairs. The early evidence cited in the study review above is all applicable to this theory. According to the interaction hypothesis, the major step-wise performance gains of middle childhood are due to the onset of formal schooling and the acquisition of literacy skills.

3.3 Proposed three-way division

There is more to metalinguistic awareness, however, than the interactionists seem to have found. Charles Read asks whether metalinguistic awareness is actually awareness of language, or awareness of the rules of language, or awareness of one's awareness (1978, p.66). I submit that metalinguistic awareness is all of the above--a three-fold phenomenon, comprised of 1) language awareness, evidenced by spontaneous comments, self-corrections and play; 2) competence awareness, evidenced by judgments and production on demand; and 3) analytical awareness, evidenced by the logical explanations of such judgments. Support for this three-way faceting of metalinguistic awareness is thus derived from the body of evidence as a whole, in that each level of evidence presented in the literature--what children produce spontaneously, what they consistently produce on demand, and what they can analytically explain--corresponds with a level of metalinguistic awareness. The three levels can be further described in terms of "opaque" and "transparent".

Language awareness is the level in which language itself is opaque to the speaker while competence remains transparent. For example: awareness of not being up to standard in language leads to practicing; and awareness of having made a mistake in language

leads to corrections and repairs. In each of these instances, language awareness is evidenced by particular linguistic behavior.

In competence awareness, which arises somewhat later, the rules of language become opaque while their analysis remains transparent. For example: awareness of phonological rules enables production and judgment of sounds and rhymes on demand; awareness of syntax rules enables production and judgment of grammatical and ungrammatical sentences, or of sentences and non-sentences, on demand. Awareness of language and of the rules of language is implicit in each of these instances.

Analytical awareness, the last level to develop, is the level at which all three facets--language, competence, and analysis--are opaque. Judgments like those mentioned above are now made, not just "by ear" or on some other grounds, but on the basis of rational rules and explanations. Examples from children are necessarily only of syntactic awareness. As you will recall, even adults are rarely able to explain phonology and word awareness.

Section 4: Conclusion

The observations made here effectively demonstrate that metalinguistic awareness is a multifaceted linguistic phenomenon. Each of the facets of metalinguistic awareness examined here, including awareness of phonology, of words, and of syntax, may be experienced on one or more of three levels, namely, language awareness, competence awareness, and analytical awareness. Any adequate working definition of metalinguistic awareness must take into account each of these three levels, as well as ceiling limitations of the various aspects.

Finally, just as idiolect and language are subject to continual change, so metalinguistic awareness. Referring once again to Read, "linguistic awareness may be changed by training, or even by merely presenting examples in the course of an experiment"; there is much that lies "just below the threshold of consciousness" (Read, 1978, p.70). This is as true for adults as for children. And so we find that metalinguistic awareness is a highly complex and unstable phenomenon, beginning early in, and continuing its development throughout, the span of life.

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XI

HUMAN LINGUISTICS

METAPHOR: A HUMAN LINGUISTICS APPROACH

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To write about language is a daunting task. One must use the very process one is trying to describe. We may set out to discuss rules and conventions or tone and ambiguity to suddenly find ourselves stymied by the realization that our words must not only convey meaning but illustrate it as well. The writer experiences an uncomfortable sense of introspection, as from staring into a mirror too long.

The task of writing about metaphor is particularly challenging. The literature on this renegade of language ranges from Aristotle to Zimmerman, from anthropology to zoology. The term "metaphormania" has been used to describe the sheer mass of material available on the subject. In 1971 with Warren Shibles' *Metaphor: An Annotated Bibliography and History*, the general interest in metaphor began its rise. By 1984, a bibliography of post-Shibles publications on the subject of metaphor included over 4000 entries. This phenomenon may be appreciated if we accept that metaphor vividly articulates the inexpressible.

An emphasis on organicism and process characterizes the intellectual climate of the 1970s and 80s which fostered this interest in metaphor. An emerging paradigm in science, notably quantum physics, chemistry, and biology may be seen as parallel to a paradigm emerging in reading and literary theory. These diverse fields share an involvement in the process of transaction between interdependent entities.

Transaction, as defined by Louise Rosenblatt, occurs when participating entities are in any way defined or transformed. From quantum physics comes the example of the dual nature of light: Scientists can "make" light appear to be either a wave or a particle by the way they choose to observe it, specifically through the instruments they use. The very nature of the scientists' conception of light, then, is the product of the scientists' interaction, or rather their transaction, with light.

While the nature of quantum physics may appear "light years away" from the pursuits of the literary critic, one need only look to Rosenblatt for affirmation of the critic's shared scientific viewpoint. In a 1964 study she wrote:

Both text and reader are essential aspects or components, one might say, of that which is manifested as *the poem*. The text, we have seen, delimits and patterns, but it ultimately functions like a chemical element: it itself merged in the synthesis

with other elements to produce, in this instance, a particular event--a poem.

Yngve's human linguistics, which firmly accepts only the standard assumption of science--all theories are tentative and subject to testing and verification--seeks to explain communication in terms of people. It rejects the goal of studying language within the context of a grammatical tradition and places linguistics inherently within the scientific tradition.

Much has been written on figurative language that is relevant to human linguistics. It draws from the studies of rhetoric and literary theory, keen insights on metaphor. Those writers see figurative language as idiosyncratic and as marked by extreme contextual dependence.

Such recognition of the reader's contribution to meaning was seldom evident in early discussion of metaphor. Aristotle proposed a *substitution* theory, consisting of giving a thing a name which belongs to something else. His focus is not on the reader but rather on the ornamentation of language. According to Aristotle, metaphor used in moderation can save diction from becoming mean and prosaic. A version of this substitution view was discussed by John Ciardi in his introductory text, *How does a Poem Mean?*. He speaks of a metaphoric formula in which $A = B$. However, A can only equal B if the reader suspends his belief in rigid rules of logic and entrusts himself to the poet's vision.

A second theory concerning the nature of metaphor may be called the *comparison* view. Here the metaphor represents an elliptical simile. War is like hell becomes "War is hell." The metaphor states that there is great similarity between war and hell. Some aspects of the similarity may be impossible to express, however.

But what of complex metaphor? Neither a substitution nor a comparison theory can adequately explain the painful impact of Emily Dickinson's "This is the hour of lead; Remembered if out-lived" or Macbeth's appreciation of sleep as "Balm of hurt minds, great nature's second course."

Such metaphors can best be understood on a personal, often holistic level. Attempts to reduce these images to explicit comparisons can lead to frustration and dilution. Andrew Ortony describes it:

To peer too closely, searching for a rational understanding, is like moving too close to an impressionistic painting. In such paintings, a particular brush mark often gets its meaning not from within itself, but from the larger context of surrounding marks . . . It conveys a *feel*, without providing the details.

This dilemma of the complex metaphor inspired I.A. Richards to propose a third theory of metaphor: the *interaction* view, based

on the idea that the terms in a metaphor somehow interact to produce some new, emergent meaning. Richards realizes the important role of context when he writes, "what seems an impossible connection . . . can at once turn into an easy and powerful adjustment if the right hint comes from the rest of the discourse."

Although Richards speaks of an interaction between tenor and vehicle within the metaphor itself, he nevertheless alludes to the connection or adjustment of these elements in the mind of the reader. Richards' interaction theory supports those who seek to champion the role of the reader.

Human linguistics attempts to explain that moment when reader and text, or hearer and spoken word, join forces in metaphoric bliss. It is a dynamic theory based on the premise that what an individual says or does communicatively at any moment depends not only on his/her repertory of categorial and procedural properties but also on the individual's state at that moment.

In the theory of individuals, communicative understanding is aided by a fairly narrowly defined referential field. Yngve calls this the *pre-context*; it is based upon a context of situation. As our eyes move across the page or we listen to a verbal message the next word or phrase may be expected to select from this pre-context by a search and match procedure.

The metaphoric message comes as a surprise. It is not included among the expectations in the referential field of the pre-context. The usual search procedure fails to turn up a match. Instead, the individual must move far outside the domain of control (or focus of attention) to the repertorial properties in search of meaning. The journey is a very personal one; the communicative terrain within each of us is as individual as a fingerprint.

The metaphor then forces the individual to consider a seemingly unrelated concept. Returning to Dickinson for a moment, we struggle with the message that it is not the hour for tea, nor the hour of rest, nor even the hour awaited for. It is the hour of *lead*. The concept "lead" brings with it a structure of allusions and connotations. Part of this structure consists of properties which reflect the ordinary choice of lead in its literal sense. This structure Yngve refers to as the *post-context*.

But the reader or hearer expects to select from the pre-context. Recognizing that the two are different, he must search for some systematic principle of similarity between them. If he succeeds, the metaphor has made the selection for him and introduced at the same time a new context and a recognition of the similarity between the two. It is a moment of discovery and insight. And, because each of us brings with him or her a unique record of experience, apprehending the metaphor is also a moment of creation.

The future for the study of metaphor has never been so promising. Researchers seek to incorporate both text and reader within a literary-scientific model based on a systematic methodology. Individual interpretive hypotheses can be validated through data from reception of readers. The reader acts as a medium whose processing activities provide observable data. Computer technology

enables the researcher to quickly and accurately analyze complex data. Human linguistics can provide the vital theoretical base for these exciting studies. And that ain't hay!

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HUMAN LINGUISTICS AND THE LAW OF CONTRACTS

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As you know from my colleagues' presentations, human linguistics is the scientific study of how people communicate (Yngve, 1986). It is the study of people and all the elements of the communication process, including but not limited to the written and spoken word. The potential applications of human linguistics are staggering to consider, given the ubiquity of communication in human endeavor. For the first time, a framework exists that will allow truly scientific research in fields that have their roots in a philosophical rather than a scientific tradition.

The law, for instance, is traditionally viewed as applied philosophy; the assumptions underlying the law of contracts are rooted in philosophical theories about why people should keep promises.¹ The practical application of these theories is found in the Restatement, Second, of Contracts (Restatement), the accepted scholarly authority for the promise-based contract theory in use in the United States.² The Restatement represents the attempt of a committee of prominent legal scholars and jurists to present in systematic form the basic principles underlying actual case law. While not a set of indisputably valid rules, it has been called "one of the great legal accomplishments of all time."³ It is merely persuasive authority, however; only case law and statutes may be cited as precedent.⁴

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Despite the Restatement's stature as a statement of legal principles, it fails to satisfactorily explain how the parties' behavior results in a contract. The authors acknowledge the importance of communication and of surrounding circumstances, but are unable to do more than that. This is not surprising, since there has been no one theory capable of integrating the communicative and legal elements of a transaction in a consistent way. Now, there is human linguistics.

I. Why a Human Linguistic Analysis of Contract?

For many of us, the term "contract" conjures up visions of long pages of incomprehensible boilerplate in type sizes that ought to be illegal. But contracts need not be written; they need not even be spoken.⁵ To make a contract, the law requires that the parties merely manifest their intention to perform, or refrain from performing, some act in the future -- each makes a promise, but one with the added element of legal enforceability.⁶ By going on to make a promise or to begin performance, each party manifests assent to the other's manifestation of intention.⁷ The Restatement specifically says that such a manifestation need not be verbal:

"The manifestation of mutual assent to an exchange ordinarily takes the form of an offer or proposal by one party followed by an acceptance by the other party or parties."⁸ "The manifestation of assent may be made wholly or partly by written or spoken words or by other acts or by failure to act."⁹ "Words are not the only medium of expression. Conduct may often convey as clearly as words a promise or an assent to a proposed promise."¹⁰

The authors of the Restatement also understood that the parties' conduct cannot be divorced from the setting and other circumstances surrounding the transaction. They recognized the importance of examining the total situation:

"Like words, non-verbal conduct often has different meanings to different people. Indeed, the meaning of conduct not used as a conventional symbol is more uncertain and more dependent on its setting than are words. A wide variety of elements of the total situation may be relevant to the interpretation

of such conduct ... the circumstances are often critical."¹¹ "Material differences of meaning are a standard cause of contract disputes, and the decision of such disputes necessarily requires interpretation of the language and other conduct of the parties in the light of the circumstances."¹²

While some of the more obvious non-verbal elements are addressed by the Restatement, it is used more by academics than by practicing attorneys. The study of law tends to be much more meticulous about theoretical matters than does actual practice. Attorneys and judges tend to ignore the everyday communicative aspects of a transaction unless forced to acknowledge them by some evidentiary detail in the fact pattern: the contract is an oral one, one of the parties has a disability that affects verbal communication, or a party attempts to testify as to a previous transaction with a person now deceased. Otherwise, the fact that people must communicate to make a contract is taken for granted, and the communication process itself is not examined or commented upon in the court's written opinion. Thus, there is often no legal record of the communicative aspects of a case that can be relied on in future cases. In addition, contracts are not generally objects of study unless they are in some way defective; a contract where the parties are in agreement is seldom the subject of litigation, and it is a rare attorney who keeps notes on all the communicative aspects of a transaction.

As attorneys, we are almost never present to observe what actually went on when a client made an unwritten contract; more often we are summoned after the fact to save the client from the consequences of his or her words or deeds. By that time, the parties' memories of the transaction have become highly selective. Even when drafting a written contract, we often fail to reduce to writing subtle non-verbal elements that arose during negotiations; we are not trained to watch for and analyze them, and there are no quick and easy guidelines to follow. Once we attorneys have been out of law school a year or two and have gained some experience, we no longer agonize over each contract provision. After drafting the first few contracts of a particular type, we tend to copy and modify whatever worked the last time, and we use preprinted forms with litigation-tested language whenever possible. Under the pressures of practice, we rely on tickler systems and checklists to be sure that we do what is necessary to avoid malpractice, but there

is no handy guide for noting the communicative behavior of the parties. Thus, we fail to gather evidence of non-verbal elements of contract transactions that might help us understand why a transaction did or did not result in a valid contract.

We in the law have turned to linguistics to try to discover what parties to contracts are doing.¹³ But in doing so, we have only come halfway. Many attorneys have enthusiastically embraced the plain language drafting movement,¹⁴ and this is as it should be. But it is not enough to concentrate only on the verbal aspects of contract transactions, because by doing so we are forced to ignore what might well be the pivotal elements of the transaction. What is needed is an integrated framework that allows us to account for all the communicative phenomena.

For instance, a common contract problem arises in connection with what is called a "usage of trade." This is defined in the Restatement as an habitual or customary practice that is so regularly observed in a place, vocation or trade that one is justified in expecting that it will be observed with respect to a particular agreement.¹⁵ If both parties know or have reason to know of a usage of trade, it acts as an additional term of the contract, even though it may not be present in the written version, and did not come up during oral negotiations.

An example would be where A and B enter into a written contract for the purchase and sale of what the contract describes as "No. 1 heavy book paper guaranteed free from ground wood."¹⁶ In the paper trade, this in fact means paper that contains less than 3% ground wood. An analysis of just the written language of this contract will lead to the erroneous conclusion that B breached the contract by selling A paper that contains 2% ground wood. An analysis that takes into account the entire transaction and surrounding circumstances will show that a usage of trade materially affects the terms of the written document, and will lead to the correct conclusion that B did in fact perform as agreed.

II. Illustration

While it is not possible to even attempt a full analysis of a contract transaction here, it is possible to illustrate some of the properties and procedures involved.

For this purpose we can turn to Section 4 of the Restatement for an excellent example of a contract for which an analysis of language alone is not sufficient to show how the parties communicate and come to an agreement.

"A, on passing a market, where he has an account, sees a box of apples marked '25 cts. each.' A picks up an apple, holds it up so that a clerk of the establishment sees the act. The clerk nods, and A passes on. A has promised to pay twenty-five cents for the apple."¹⁷

From a legal point of view, this is a very simple transaction. The required elements of a contract -- offer, acceptance, and consideration -- are all present. The sign is a general offer, and may be accepted by anyone who reads it.¹⁸ A has accepted by promising to pay 25 cents for the apple, in accord with the stated terms of the offer. The consideration is the exchange of ownership of the apple in return for A's promise to pay 25 cents at a later date. But the simplicity of this analysis is illusory. What did the parties do that caused a contract to take effect between them, and how did they do it without speaking to each other?

The sequence of communicatively important events in the above fact pattern are as follows: A sees a box of apples marked "25 cts. each." A holds up an apple and gets the clerk's attention. The clerk nods, then A leaves with the apple. The clerk makes whatever recordkeeping entry is necessary to reflect that A owes 25 cents for the apple.

A human linguistic analysis of the game of tag (Yngve, forthcoming) provides some guidance in applying the principles of human linguistics to examples such as this. Certain properties of communicating individuals and of linkage participants can be postulated based on the conduct of A and the clerk. After the transaction, A has the property of PURCHASE-MADE set to true or false, and the clerk has the property of SALE-MADE set to true or false. If both of these properties are set to true, there will be a valid contract; however, the settings of these properties will not necessarily agree. It is entirely possible for one party to believe a contract is made, while the other does not; these are the situations that lead to litigation.

The parties also have procedural properties, the execution of which change the values of PURCHASE-MADE and SALE-MADE. When the sign is put on the apples, a procedure sets the property OFFER-MADE for the clerk. This in turn triggers an expectation procedure; the clerk is now waiting for customer response to the offer. Because this is a general offer, the property OFFER-MADE will remain set until the apples in the box are gone or until the clerk leaves work for the night. When the customer A responds, and the clerk processes this response, procedures execute for the clerk's acknowledgement and SALE-MADE will be set.

When A processes the information on the sign, a procedural property sets a conditional property OFFER-UNDERSTOOD for him. OFFER-UNDERSTOOD, and other properties such as A's need for an apple, trigger a procedure that involves holding up the apple and gaining the clerk's attention. This procedure sets a conditional property ACCEPTANCE-MADE for A. It is the conditional properties at the time this gesture is made that make this gesture part of the procedure that sets ACCEPTANCE-MADE. In another context, i.e., with another set of operative properties, raising an apple would not be part of accepting an offer. If A held the apple up to offer it to another person, or to examine it for bruises, he would not be accepting an offer, even though he used the same physical gesture. Some properties necessary for the context to be that of a contract are that A must be an offeree -- the offer must have been made to him; that he must recognize the clerk as the offeror; and that he must take the transaction seriously.

When the clerk has processed A's gesture, the conditional property ACCEPTANCE-UNDERSTOOD is set for the clerk. It triggers a procedure to acknowledge the acceptance, which results in the clerk's nod. This in turn sets SALE-MADE for the clerk. When a procedure executes for A to process the clerk's nod, PURCHASE-MADE is set for A. If both SALE-MADE for the clerk and PURCHASE-MADE for A have been set to true, procedures execute to change the ownership of the apple. The clerk's property of being owner of the apple changes from true to false, and A's property of being owner of the apple changes from false to true. PURCHASE-MADE also sets A's property PROMISE-TO-PAY, which will at some time in the future be reset to zero when A pays his account. For the clerk, SALE-MADE triggers a task procedure, the execution of which results in the clerk adding a

charge of 25 cents to A's account. This sets to true an expectation procedure, which will be reset whenever A pays off his account at the store.

To understand the legal implications of the parties' behavior, it is necessary to shift our focus from the parties as communicating individuals and participants to the linkage in which the formation of the contract takes place.

In human linguistics, a linkage is a dynamic system designed to model group interactions rather than individual communicative behavior.¹⁹ Joint communicative activity, such as the formation of a contract, can be represented in terms of linkage properties and procedures. The execution of linkage procedures changes the settings of linkage properties, progressively changing the state of the linkage. Before all the required properties have been set, there is no contract; upon the execution of the last procedure and the setting of the last property, a contract comes into existence.

As participants in the linkage, the clerk has the property of OFFER-MADE, while A has the property of OFFER-UNDERSTOOD. These are properties of the parties as individuals. But as participants A and the clerk also fill role parts in the linkage. In relation to the linkage they are playing the parts of CLERK and CUSTOMER, and, from a legal point of view, of OFFEROR and OFFEREE. When the sign has been placed on the apples and A has read and processed it, the execution of this linkage procedure results in the linkage property OFFER-COMplete being set. At this point the law deems an offer to have been made. ACCEPTANCE-COMplete and CONSIDERATION-PROVIDED are similarly set. Once all three are set to true, there will be a change of state of the linkage from NO-CONTRACT to CONTRACT.

III. The simulator

Our research group has been working on a new simulator model, a successor to the HLA1B (Ralph) model. It will include properties to model promise-making and promise-breaking behavior, and the reactions of the parties to these events.

The simulator is extremely helpful because it allows formalization of properties and procedures in human linguistic notation, then makes it possible to test our understanding of the process by running the

program. Debugging the program forces much reevaluation of the relationships between properties and procedures in the promise-making process, and aids immeasurably the formalization of this extremely complicated communicative process. Plans for the next model include the move from promise to contract, which will probably involve postulation of properties and expectation procedures having to do with the legal enforceability of promises.

This paper is designed to show that human linguistics can provide a framework for learning what people do when they make contracts. Many observations and simulations will be necessary before the contract-making process begins to be understood. It will be necessary to study the relationship between communicating individuals and linkages, as it will be particularly important to understand how the two sets of properties and procedures are related during the formation of a contract. The ultimate goal is to construct a scientific model that helps isolate what causes contracts to fail.

NOTES

1. An excellent discussion of the origins of classical contract theory may be found in P.S. Atiyah, Promises, Morals, and Law (Oxford: Clarendon Press, 1981.)

2. Restatement of the Law, Second: Contracts 2d (St. Paul: American Law Institute Publishers, 1981), pp. 1-3.

3. Anne von der Lieth Gardner, An Artificial Intelligence Approach to Legal Reasoning (Cambridge, MA: The MIT Press, 1987), pp. 26-7.

4. See The Harvard Law Review Association A Uniform System of Citation, 13th ed. (Cambridge, MA: The Harvard Law Review Association, 1981), Section 2.4.

5. Restatement, Section 19.

6. Restatement, Sections 1-5.
7. Restatement, Section 18.
8. Restatement, Section 22(1).
9. Restatement, Section 19(1).
10. Restatement, Section 19, Comment a.
11. Restatement, Section 19, Comment a.
12. Restatement, Section 20.

13. For example, see R.J. DiPietro, ed., Linguistics and the Professions: Proceedings of the Second Annual Delaware Symposium on Language Studies. (Norwood, NJ: Ablex Publishing Corporation, 1982), pp. 99-154.

14. An excellent guide to plain language drafting is R.C. Wydick's "Plain English for Lawyers," 66 California Law Journal 727. (1978.)

15. Restatement, Section 222.

16. Restatement, Section 222, Comment b, Illustration 6.

17. Restatement, Section 4, Comment a, Illustration 2.

18. Restatement, Section 29, Comment b.

19. Yngve, Victor H. Linguistics as a Science. (Bloomington and Indianapolis: Indiana University Press, 1986), pp.78-82.

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RALPH-A COMPUTER MODEL SIMULATING A COMMUNICATING INDIVIDUAL

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I. Introduction

V. Yngve (1986) has proposed a new conception of linguistics as science, which is christened human linguistics. Human linguistics takes people from the point of view of their communicative activity as its object of study instead of language, as is the case in traditional linguistics. People and their communicative activity being observable, human linguistics qualifies as a true science in the sense that physics and chemistry are sciences because any theory proposed in human linguistics is testable against objective observation.

In human linguistics, people are studied as communicating individuals represented in terms of properties which include conditional properties, procedural properties and so on. Models of communicating individuals can be translated into computer models so that it will be feasible to test the models against objective observation even if they are very complex and otherwise unmanageable in size.

Ralph** (see Appendix) is a sketch of such a computer model. Ralph says "Hello!" to the person addressing him, remembers the location of a person when he gets the information, tells the inquirer where a certain person is and says "Bye!" when the person talking to him says "Bye" to him. This model is our first effort at formulization in human linguistics. Consequently, Ralph's communicative activity is restricted to a very very small range. Many properties in the model are aggregations of more fundamental properties and some properties are not posited in the model. For instance, when Ralph hears Vic say "I'm going to library", the state of Ralph's mind in this regard could be: Vic's leaving here and will be in the library, while the program of Ralph only records Vic's location.

Although Ralph is linguistically primitive, it does illustrate a central feature of human linguistics, namely, it

does not insist a priori on separate levels for phonology, syntax, semantics, pragmatics, background knowledge, etc., leaving this to emerge if necessary from the details of linguistic research. The implication is that syntactic, semantic, and pragmatic phenomena may be handled in a single structure.

In traditional linguistics, the major line of thought is that language is divided into levels which are autonomous and interactions only occur between neighboring levels. This line of thought is represented earlier by structuralists and more recently by Chomsky (1965,1981). Chomsky insists particularly on the view point that syntax is autonomous, semantics is interpretive and there is no interaction between syntax and pragmatics.

In this paper, we want to show that, for Mandarin Chinese at least, semantics is not simply interpretive and pragmatics does interact with syntax. Thus the evidence presented here will aid in deciding how to treat syntactic, semantic, and pragmatic phenomena in human linguistics.

II. Interaction between syntax and pragmatics

As has been pointed out most clearly by Y. R. Chao (1968), Chinese sentences should be considered as consisting of topic and comment instead of subject and predicate, as is the case with English. In a sentence like

- (1) Zhe Ba Dao Zhangsan Ge Rou le
 this (unit) knife cut meat (asp.)

This knife, Zhangsan cut meat (with).

Zhe Ba Dao (this knife) is the topic and Zhangsan Ge Rou le (Zhangsan cut meat) is the comment. A noun phrase (NP) in the position that Zhe Ba Dao occupies in (1) is a topic but not a subject because it is what the comment is about and doesn't have any of the subject properties set up by Keenan (1976). The NP in that position is not selectionally restricted by the verb and can be in a variety of semantic relationships with the verb. Look at the following sentences of (2),

- (2) a. Na Ge Ren Zhangsan Ge Rou le.
 that (unit) person cut meat (asp.)
 (For) that person, Zhangsan cut meat.

- b. Zhe Jie Wuzi Zhangsan Ge Rou le.
 this (unit) room cut meat (asp.)
 (In) this room, Zhangsan cut meat.
- c. Jingtian Shangwu Zhangsan Ge Rou le.
 today morning cut meat (asp.)
 This morning, Zhangsan cut meat.

In (2), the NP's Na Ge Ren (that person), Zhe Jie Wuzi (this room) and Jingtian Shangwu (this morning) are respectively human NP, place, and time. They express benefactive, locative, and time relationship with the verb.

The existence of topics in Chinese sentences is not the result of topicalization, as might be suspected and may be the case with English. There are two arguments supporting this observation. The first one is that if the existence of the topic were the result of topicalization, there should always be well-formed sentences before the application of topicalization, but this is not the case. For (1), there is no sentence which equals (1) minus topicalization except

- (3) Zhangsan Yong Zhe Ba Dao Ge Rou le.
 use this (unit) knife cut meat (asp.)

Zhangsan cut meat with this knife.

where an extra coverb is used. There are even sentences like (4) from Li & Thompson (1982),

- (4) Zhe Chang Huo Xinkui Xiaofangdui Lai
 this (unit) fire fortunately fire brigade come
 de Zhao.
 (particle) early
 (For) this fire, fortunately, the fire brigade came
 early.

for which no sentence at all can be found which corresponds to it before the application of topicalization. So, the suspicion that topics are the result of topicalization is ungrounded.

The second reason is that topicalization is supposed to be a root transformation (Emonds, 1976), which only applies in matrix sentences. However in Chinese, topics can be heads of relative clauses. For instance, corresponding to (1), we can have

- (5) Zhangsan Ge Rou de Zhe Ba Dao...
 cut meat (particle) this (unit) knife
 the knife Zhangsan cut meat (with)...

and corresponding to (4), we can have

- (6) Xinkui Xiaofangdui Lai de Zhao
 fortunately fire brigade come (particle) early
 de Zhe Chang Huo...
 (particle) this (unit) fire
 the fire (for) which fortunately the fire brigade
 come early...

Thus, topics in Chinese cannot be the result of the application of topicalization but exist in the sentences as they start out.

If it is true that Chinese sentences start out with topics and comments, then Chinese syntax should be considered as directly related to pragmatics in addition to semantics and other levels.

III. The dictating effect of semantics on syntax

The interpretive view of semantics has been insisted on by Chomsky and others (e.g. Chomsky, 1970), in which semantics is interpreted from syntax and the interaction between them in the opposite direction is not allowed. This view has been challenged by generative semanticists (e.g. McCawley, 1970). In the view of generative semantics, the semantic presentation is the real deep structure and determines the history of the syntactic derivation of the sentence. So, according to generative semantics, semantics has what we'll call a dictating effect on syntax. Interaction of this kind between semantics and syntax is in the direction just opposite to the interpretive interaction between them.

While it is not clear yet whether the interaction between semantics and syntax should be all interpretive or all dictating, there are, at least, phenomena in Chinese which show that the dictating interaction between semantics and syntax does exist. In the following, we would like to present a couple of such phenomena.

The first has to do with Ba-construction. Ba is usually called pre-transitive (e.g. Li & Thompson, 1982), which often introduces the object of the following verb. For instance, consider the following two sentences, which are equivalent:

- But (8'') is a complex sentence consisting of a major clause Zhangsan Ku (Zhangsan wept) and a result clause Maojin Wanquan Shi le (the towel was all wet) connected by the particle de. The NP Maojin in (8'') belongs to the result clause instead of being the object of the verb, as is the case in (7, b). If what is taken into consideration is only syntactic form, (7, a) and (8) should be two entirely different types of Ba-sentences. However, semantics unifies them. Syntactically, Kushi (weep-wet) is a compound verb and also a transitive verb, but, semantically, it is a result compound meaning that the result expressed by the result part Shi (wet) is brought about on the entity expressed by the object through the action expressed by the action part Ku (weep), which is semantically equivalent to Ku de Maojin (Wanquan) Shi le (weep so that the towel was (all) wet), an action verb followed by a result clause. Thus, if the formally different Ba-sentences like (7, a)

and (8) should be considered as a unified type (and we surely think they should), the dictating effect of semantics on syntax should be recognized.

Another phenomenon which shows the dictating effect of semantics on syntax has to do with passives in Chinese. The following two sentences are examples of Chinese passives:

- (9) Zhe Ge Kanshou Bei Fanren Pian le.
this (unit) jailor (passive) prisoner cheat (asp.).

This jailor was cheated by prisoners.

- (10) Zhe Ge Kanshou Bei Fanren Pao le
this (unit) jailor (passive) prisoner run (asp.)
San Ci.

three time

*This jailor was run away by prisoners three times.

Formally, (9) and (10) cannot be the same type of passives because Pian (cheat) in (9) is a transitive verb while Pao (run) in (10) is an intransitive verb. What unifies them is the semantics. In Chinese, the passive expresses that the entity expressed by the first NP is affected by what is expressed by the rest of the sentence. So, (9) expresses that the jailor was affected by prisoners cheating him and (10) expresses that the jailor was affected by prisoners running away (so that he was demoted, for instance). The semantics, but not the syntactic form, dictates the use of passive.

As a matter of fact, phenomena of this type are not restricted to Mandarin Chinese. Davison (1980) discussed peculiar passives. She pointed out that in English there are sentences with transitive verbs and direct objects that cannot be passivized and there are also sentences with intransitive verbs that can be passivized. An example of the former type is

- (11)*He is resembled by his son.

And an example of the latter type is

- (12) The bed has been slept in.

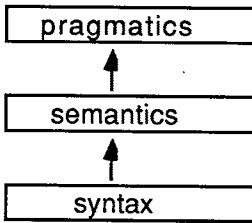
What makes (11) unacceptable and (12) perfect is semantics.

In sum, there are linguistic phenomena which syntactic form alone cannot explain and the dictating effect of semantics on syntax has to be recognized.

IV. Conclusion

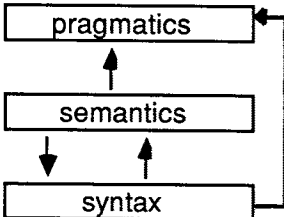
From what has been shown above, we should, instead of the traditional model of interaction between syntax, semantics and pragmatics like

(13)



at least recognize a model like

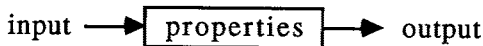
(14)



in which syntax is directly related to pragmatics and semantics has, in addition to an interpretive relationship, a dictating relationship with syntax.

A part of the human linguistics position is that there is no such thing as language, not to say levels of language. Everything in a person's mind that plays a part in his communicative activity is represented by properties. So, the human linguistics model might well be represented without levels as

(15)



The evidence presented here weakens the arguments in favor of separate levels for syntax, semantics and pragmatics, and is consistent with a structure of human linguistics that does not recognize separate levels.

Footnotes

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**Ralph was collectively developed in a 1986 seminar by the instructor V. Yngve and the students D. Kozakowski, M. Panic, L. Schwabenbauer, and the author.

Appendix

Ralph

Ralph is written using the simulator called HLA1B developed by V. Yngve. The words appearing in Ralph have the following meanings:

I = input; P = property; O = output; x = and; v = or;
: = control; and :: = set.

I : John	I : Millan	I : Vic	I : J	I : M	I : V
I : I'm going	I : to library	I : to class		I : to office	
I : Where is	I : Thanks	I : Bye			

P : NJ	P : NM	P : NV	P : JL	P : JC
P : JO	P : ML	P : MC	P : MO	P : VL
P : VC	P : VO	P : LOC		P : ?LOC

O : Hello, John!	O : Hello, Millan!	O : Hello, Vic!
O : He's in library.	O : He's in class	O : He's in office.
O : You're welcome!		O : Bye!

J :: NJ	Bye v M v V :: -NJ	NJ : Hello, John!
M :: NM	Bye v J v V :: -NM	NM : Hello, Millan!
V :: NV	Bye v J v M :: -NV	NV : Hello, Vic!

I'm going :: LOC	Bye :: -LOC
------------------	-------------

LOC x NJ x to library :: JL	JC v JO :: -JL
LOC x NJ x to class :: JC	JL v JO :: -JC
LOC x NJ x to office :: JO	JL v JC :: -JO

LOC	x	NM	x	to	library	::	ML		MC	v	MO	::	-ML
LOC	x	NM	x	to	class	::	MC		ML	v	MO	::	-MC
LOC	x	NM	x	to	office	::	MO		ML	v	MC	::	-MO

LOC	x	NV	x	to	library	::	VL		VC	v	VO	::	-VL
LOC	x	NV	x	to	class	::	VC		VL	v	VO	::	-VC
LOC	x	NV	X	to	Office	::	VO		VL	v	VC	::	-VO

Where	is	::	?LOC		Thanks	::	-?LOC
-------	----	----	------	--	--------	----	-------

?LOC	x	John	x	JL	:	He's	in	library.
?LOC	x	John	x	JC	:	He's	in	class.
?LOC	x	John	x	JO	:	He's	in	office.

?LOC	x	Millan	x	ML	:	He's	in	library.
?LOC	x	Millan	x	MC	:	He's	in	class.
?LOC	x	Millan	x	MO	:	He's	in	office.

?LOC	x	Vic	x	VL	:	He's	in	library.
?LOC	x	Vic	x	VC	:	He's	in	class.
?LOC	x	Vic	x	VO	:	He's	in	office.

Thanks	:	You're	welcome.		Bye	:	Bye!
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A HUMAN LINGUISTICS ACCOUNT OF THE GERMAN PRONOMINAL SYSTEM

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Conducting this study has been a bit like revisiting a German 101 class. The material under discussion here will be quite familiar to anyone with even minimal background in the German language. The viewpoint we will take, however, is not so familiar. The topic is the German pronominal system, in particular its aspects of case, gender, and the formal/informal distinction. The approach is that of human linguistics, the theory that Victor Yngve has developed over the past nineteen years¹.

The human linguistics account of a pronominal system will look very different from the traditional accounts we all know. Our concerns, and the issues we raise, may differ from those raised in current and traditional literature. Contemporary work on anaphora often addresses issues of syntactic structure and notions of command. The details of the form of the pronoun are simply supplied by the morphology. The morphological paradigm itself has held little interest except to linguists working in the area of linguistic universals. While such work has challenged traditional notions of grammatical categories, still the paradigm remains a fact of life for most students of languages. The view of pronouns as simply "given" by the morphology has removed virtually all interest from questions of how and why a speaker of German might say sie rather than ihr in some situation.

But how can we say that the forms in a paradigm are just "given"? Paradigms are static constructs of grammar, not models of human communication. Even so, some parameters of paradigms are not obviously grammatical at all: Deciding whether to use a formal or an informal pronoun is not a very linguistic decision, but for the fact that speakers make a linguistic distinction. While many linguists have shied away from describing speakers' processes, others of us would like to know what speakers really do when they talk. A human linguistics cannot simply push aside issues that paradigms may obscure. On one hand, we hope to provide explanations more complete and accurate than older accounts have given us. On the other, we hope to provide explanations in some cases where explanations have not been possible up to now.

* I would like to acknowledge with gratitude the support of the Andrew W. Lurie Memorial Fund in the Graduate Library School of the University of Chicago. I would also like to acknowledge the patient guidance and assistance provided by Victor Yngve during all phases of this project.

An integral part of the description will be contextual information, as reflected in the communicative properties of the individual. The model we establish will not be a grammatical model, but a model of the communicative aspects of the person. This takes a radical departure from the linguistics of language. We do not speak of language or meaning at all, but of linguistic behavior and the execution of task procedures. A task procedure is sort of a behavioral trigger: the speaker performs an act upon the fulfillment of some set of properties. The state of a person's properties might reflect such diverse information as the speaker's mood, the topic of discussion, the nature of the relationship between the speaker and other participants in the linkage, or where the conversation takes place. Properties may change in response to linguistic signals, linkage-level information about the setting or other participants in conversation, or information from within the person himself. Because properties are changing continually, the account will be inherently dynamic.

One might say that anaphoric relations in human linguistics are explained in terms of the context. But we can be more specific, and more accurate, by introducing the domain of control. This is basically a refinement of what we mean by "context." Strictly defined, the domain of control is the body of procedures that stand on the verge of being triggered (YNGVE 1986:75). Procedures generally involve several variables. As more variables change to meet the conditions for the procedure, the procedure comes closer to being triggered. The status of items in the domain of control determines the possibility of pronominalization as well as other referential behavior such as the use of the definite article. The most significant difference between our general use of the term "context" and the domain of control is that, while context is usually thought to be external to the person, the domain of control is internal.

The German pronominal system offers a couple of features that make it particularly interesting from this point of view. It is an observable fact that speakers of all languages make certain distinctions when they speak. Traditional grammar has described this indirectly by listing parameters: In German, we have learned, pronouns are marked for person, number, gender, case, and formal versus informal modes of address. Now, one might think, to state this in human linguistics, one may just lay out a chart of procedures of the following form:

singular x 1st person x masculine x nominative : der

or

singular x 2nd person x accusative x formal : Sie.

Clearly this does no more than translate our old paradigm into procedure notation. That would be a trivial account, not to mention the fact that it is out of line with human linguistic theory. Terms like "singular" and "accusative" are grammatical properties attributed to words. From the point of view we have taken, however, there is really nothing about a word on a page, or a pattern of sound waves, that embodies something like a case distinction; rather, the speaker makes distinctions which are

reflected in his linguistic actions. The issue of real interest for us, then, is to determine the conditions by which a person uses one form of a pronoun over another. Instead of focusing on paradigms, or on inventories of forms, let us look directly the German speaker's distinctions--in particular, those traditionally labelled as case, gender, and formal/informal.

Consider first the du/Sie distinction. If one is learning German from a typical first-year grammar book, he soon discovers two columns of forms under the heading of second person: "formal" and "informal." The book usually offers a prose description of the situations in which each form should be used. We are told, for example, that du is used for children, animals, intimates, and sometimes peers. Learning the socially acceptable use of du or Sie depends on applying the grammar-book rules to real-life situations. Unfortunately, the grammar-book account is often incomplete. For instance, we might not hear about how the distinction can be used to express the speaker's attitude--how we can distance a close friend by switching to Sie during an argument, or insult a stranger by the use of du. In any case, choosing whether to use du or Sie requires an assessment of the situation and the people involved. In this way the grammar-book approach is understandable, and has even seemed justified: the linguistics of language has offered no other way to speak on such issues. To bring du and Sie into the realm of linguistic theory, we need some way to formalize, refine, and clarify descriptions of situations. This can be accomplished in part through the domain of control.

Now, for a person the speaker knows, there is usually no question about which form of address to use. It is included in the speaker's knowledge about him, along with other information such as his age and the type of relationship he has with the speaker. In our simulator model, we have treated just this simple case. Recognition of a person will trigger a pre-determined du or Sie, just as it triggers calling that person by name.

Many of the properties involved in setting du or Sie may be relevant at the linkage level, as they are significant to a description of the communicative interaction between people. For present purposes, however, we will consider the properties of the individual only. Here we see how task hierarchies work into the description. In his dealings with people, a speaker has at the top level a large communicative task that involves many factors and subtasks. Information relevant to this level of description can determine the choice between formal and informal pronouns. One subtask to this large level is speech, which in turn has as a subtask the production of pronouns. The use of a particular pronoun is a fairly low-level task, but it uses information that entered at the high level of communicative interaction. This example also illustrates how the properties we use are not always "linguistic" in the traditional sense. If a property "x is a good friend" is needed to account for y's linguistic behavior, we simply set it up as an input to the system. What we consider to be "linguistic" becomes mostly a matter of common sense and convenience; it ultimately makes no real difference for an account of human behavior where we draw the lines between the fields.

When we deal with an unknown person, the situation becomes more complicated. The speaker must evaluate the age of the addressee and the social situation. More complex still is the use of the distinction as a method of insulting or of social distancing. One must consider the relationship between the people, their psychological states, and the social and cultural implications of the distinction itself. While person_y may use linguistic means to give person_x "the cold shoulder" or to insult him, the significance of the action is sociologically, psychologically, and culturally defined. An accurate explanation of such actions is possible only given the relevant contextual information.

Gender agreement of pronouns requires searching the context and the higher levels of the communicative task. The situation of real interest here, that which will test our account, is that of disagreement between natural and grammatical gender. The classic German example is probably das Mädchen--"girl" is a neuter noun in German. Our grammar books may tell us that grammatical gender "takes precedence" over natural gender. We can capture this insight by specifying the level of task within which material is available for anaphora. A brief example may make this clear. Suppose a person knows a girl. The fact that she is female is part of what he knows about her, and may enter the description at some higher level of task. It will be in his domain of control along with other information about her, and will be available for reference as needed. When he speaks of her, however, he will usually introduce into the domain of control her name, or das Mädchen, or ein Mädchen. These form the linguistic context in the domain of control. Anaphoric reference to the girl involves a process of searching through this linguistic context to determine her status as a topic of discussion, from which the correct form of the pronoun is determined. The grammatical gender thus enters the domain of control strictly within the linguistic subtask.

Natural and grammatical genders are thus distinctions relevant to different task-levels. This makes intuitive sense. The linguistic phenomenon by which the linguistic label of inanimate things triggers certain pronouns bears little apparent resemblance to the process of identifying the natural gender of living things. Of course it is true cross-linguistically that the label for living things often accords with their natural gender. Examples like das Mädchen show us that we need to separate the task levels.

Redundant case--that which is predictable, following certain prepositions or verbs--is another syntactic phenomenon we can easily handle. It is helpful to speak of a "prepositional phrase task," the completion of which triggers another element in some larger task. The danger of such terminology is that we might appear just to put new labels on old ideas. The theoretical construct underlying this so-called "prepositional phrase task" is clearly not traditional. Producing mit might trigger the production of ihr--but the word mit itself does not control the word ihr in any actual sense. Rather, the task of saying mit will set a property which in turn enters into the task procedure for the pronoun so that ihr is produced as opposed to sie. The prepositions such as an and in, that

trigger different forms depending on whether the speaker is describing a situation of location or of motion, require not only information about the specific preposition in the prepositional phrase task, but also from some higher-level task. The procedure requires an additional property be set along with that from the preposition.

Non-redundant case, with no preposition, requires accessing information entirely from a high-level task, perhaps something like a sentence-task. The description of the subtasks to this larger task is complex beyond our present means; yet we can imagine that they may be somewhat analogous to traditional functional categories like subject, object, and indirect object. Something of this sort will be necessary to account for case distinctions indicating, for example, that someone is a recipient, a so-called indirect object. Then, the execution of an indirect-object task would trigger the execution of an indirect-object-pronoun task. Again, this is not just a new label; it is a dynamic process to which we have given a traditional-sounding name for the sake of convenience.

From the outset it might be a bit difficult to imagine what the body of linguistic theory will look like, stated in terms of properties and procedures. Given the complexity of human communication, and the number of factors involved, we are presently able only to treat simple, straightforward situations. Yet the tasks we set up at this level will be useful in establishing other tasks. If we can work out how a "prepositional phrase task" works, we can move on to the larger tasks of which it is a component. The theory will be built by moving from simple tasks to more complex, with a goal to address all the diverse phenomena that are a part of human communication.

NOTES

- ¹ See especially Yngve 1986.

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HOW PEOPLE UNDERSTAND ENGLISH PRONOUNS:
A HUMAN LINGUISTIC APPROACH*

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In this paper I would like to give a preliminary report of the study of English personal pronouns within the framework of human linguistics. As the theory is familiar to the LACUS community, I will go directly to the report.

The question of reference is not new to linguists. One can easily cite a long list of theories and approaches to this topic. But in spite of the insights on pronouns as linguistic forms provided by those studies, many people have realized that the study of pronouns cannot be complete without also studying all the relevant non-linguistic factors. This realization has not yet been able to bring out satisfactory treatments. This inability on the part of linguists arises mainly as a result of their focus on language as the object of study. Language, according to human linguistics, is not physical and so cannot be studied scientifically as chemical elements are studied in chemistry and matter is studied in physics. On the other hand, people are physical and their communicative behaviors are easily observable. Therefore to make linguistics a science, human linguistics studies people. It focuses not only on speech and other means of communication, but also on all the relevant factors that have an impact on human communication. It is this characteristic that makes human linguistics unique among the current linguistic theories.

A human linguistic approach to the description of how people understand English pronouns differs from all the other approaches. Human linguistics considers English pronouns from the viewpoint of a communicating individual. Let me illustrate this point with an example. Consider the conversation in (1):

(1) John: Bill is in town.

Mary: I thought so.

It is clear that both the participants in (1) know who the referent of the pronoun *I* is. However, most theories of reference do not account for why the same pronoun is taken by John to refer to Mary and by Mary to refer to herself. In human linguistics this fact is brought to light in a straightforward way.

Human linguistics holds that every communicating individual has properties that categorize and set the domain of control of the individual at any point in time. These properties, in particular the

* I am grateful to Professor Victor Yngve for the many discussions that I have had with him on this paper. His many valuable comments on the experiment enable me to report the contents of this paper, but I alone remain responsible for the errors in it.

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conditional properties, are changeable in a binary fashion. The changed properties cause changes in other properties. The chain of causal changes reflects the changing domain of control for that individual. The domain of control governs how the individual communicates and understands at a particular point in time. In our example, just before the conversation in (1) takes place, the two participants John and Mary are said to each have the following respective properties¹:

(2) <u>John</u>	<u>Mary</u>
self is speaker = 0	self is speaker = 0
self is addressee = 0	self is addressee = 0
self is in conversation = 0	self is in conversation = 0
Mary is speaker = 0	John is speaker = 0
Mary is addressee = 0	John is addressee = 0
Mary is in conversation = 0	John is in conversation = 0

The strings on the left of the equal sign are categorial properties that name the variables characterizing each individual. The properties on the right of the equal sign are conditional properties that determine whether an individual at a particular point in time does or does not have the properties.

When John starts uttering, 'Bill is in town', some of the conditional properties change, as can be seen in (3):

(3) <u>John</u>	<u>Mary</u>
self is speaker = 1	self is speaker = 0
self is addressee = 0	self is addressee = 1
self is in conversation = 1	self is in conversation = 1
Mary is speaker = 0	John is speaker = 1
Mary is addressee = 1	John is addressee = 0
Mary is in conversation = 1	John is in conversation = 1

The introduction of *Bill* activates under both domains of control properties relating to Bill, as shown in (4):

(4) <u>John</u>	<u>Mary</u>
Bill is speaker = 0	Bill is speaker = 0
Bill is addressee = 0	Bill is addressee = 0
Bill is in conversation = 0	Bill is in conversation = 0

Human linguistics makes a distinction between the properties relating to an individual and the properties of an individual's knowledge about another individual. In (4) the list of properties under John are John's properties indicating John's knowledge about Bill.

When Mary begins to say, 'I thought so', conditional properties for John and Mary change again, as can be seen in (5):

¹ Throughout this paper I will adopt the human linguistic convention that properties of the communicating individual will not be explicitly listed unless they are directly relevant to the discussion at hand. Thus properties of gender for John and Mary, for example, are not listed in (2).

(5) John

self is speaker = 0
 self is addressee = 1
 self is in conversation = 1
 Mary is speaker = 1
 Mary is addressee = 0
 Mary is in conversation = 1
 Bill is speaker = 0
 Bill is addressee = 0
 Bill is in conversation = 0

Mary

self is speaker = 1
 self is addressee = 0
 self is in conversation = 1
 John is speaker = 0
 John is addressee = 1
 John is in conversation = 1
 Bill is speaker = 0
 Bill is addressee = 0
 Bill is in conversation = 0

In addition to these properties, various pronoun-relating properties also need to be set up, as shown in (6):

(6) John

self-is-current-referent = 0
 Mary-is-current-referent = 0
 Bill-is-current-referent = 0

Mary

self-is-current-referent = 0
 John-is-current-referent = 0
 Bill-is-current-referent = 0

Assuming that properties about physical inputs such as *I* are already accounted for¹, the setting procedures in (7) determine the current referent:

(7) John

self-is-speaker ²	x	I	::	self-is-current-referent
-self-is-speaker			::	-self-is-current-referent
Mary-is-speaker	x	I	::	Mary-is-current-referent
-Mary-is-speaker			::	-Mary-is-current-referent
Bill-is-speaker	x	I	::	Bill-is-current-referent
-Bill-is-speaker			::	-Bill-is-current-referent

Mary

self-is-speaker	x	I	::	self-is-current-referent
-self-is-speaker			::	-self-is-current-referent
John-is-speaker	x	I	::	John-is-current-referent
-John-is-speaker			::	-John-is-current-referent
Bill-is-speaker	x	I	::	Bill-is-current-referent
-Bill-is-speaker			::	-Bill-is-current-referent

These setting procedures are procedural properties that are also part of the individual's domain of control. By matching the relevant categorial and conditional properties against the setting procedures, the domain of control determines for the individual the current referent. Thus John's domain of control determines for him that Mary but not he himself or Bill is the current referent, and Mary's domain of control determines

¹ In order to concentrate on one problem at a time, it is necessary within the framework of human linguistics to assume certain inputs and properties without worrying about their details. It is hoped that once enough of the problems are solved, the whole picture can be completed by connecting everything appropriately.

² A property is conventionally taken to have the value of 1 when preceded with nothing and the value of 0 when preceded by the '-' sign. Other conventions include *x* read as 'and', *v* read as 'or', and :: read as 'set(s)'. So the first procedure would be read as 'self-is-speaker and I sets self-is-current-referent'.

for her that she herself but not John or Bill is the current referent.

This relatively straightforward account of the pronoun *I* in (1) is different from all the other accounts. A typical description of *I* in traditional accounts, for instance, would be something like 'a first person, singular pronoun'. By labelling the pronoun *I* as 'first person' the traditional approach is making the assumption that this feature belongs to the linguistic form *I*. This assumption is taken for granted by traditional linguists and most other linguists who come from that tradition. Human linguistics rejects the existence of features for a linguistic form but holds that it is the properties and procedures of the individual that are crucial for the correct use and understanding of speech. While the traditional account relates the determining factors exclusively to the linguistic form, human linguistics looks at the whole context for determining elements. In the case of the use and understanding of *I*, human linguistics focuses on the whole talk-exchange situation and the properties of the communicating individuals. For human linguistics, every element that could have a possible bearing on human communication should be so represented in its formal description. The mechanism devised for human linguistic research is such that it is able to represent all that is relevant to how people communicate on the one hand and is easily implementable by computer on the other. It is possible to simulate communicating individuals on the computer and test human linguistic hypotheses about how people communicate.

The rest of the paper will be a report of an on-going study of how people understand English pronouns in the light of a human linguistic approach. The study makes use of a human linguistics simulator program that runs on IBM-PC compatible computers.

In order to study the properties of people as communicating individuals, two characters, John and Mary, are set up in our program as participants in a conversation, which runs as in (8):

(8) John: Bill is in town.

Mary: I thought so.

John: How did you know?

Mary: Well, you know Sue and Bill are close friends. She came back from Europe yesterday, so it's only natural that he will want to come and visit her.

John: Are you going to meet him?

Mary: I couldn't. I've promised to help Fred with his math, so I'll be tied up all day.

In the discussion of the conversation in (1), which is the first part of the present conversation, we have already illustrated above how a human linguistic approach would account for the understanding of the pronoun *I*. Here we will go on to consider how the pronouns *you*, *he*, *she*, *her*, and *his* might be understood. We know that at the end of Mary's first utterance, John and Mary each have the set of properties as shown in (5)-(7). Now when John starts to say, 'How did you know?', the conditional properties change, as can be seen in (9):

(9) John

self is speaker = 1
 self is addressee = 0
 self is in conversation = 1
 Mary is speaker = 0
 Mary is addressee = 1
 Mary is in conversation = 1
 Bill is speaker = 0
 Bill is addressee = 0
 Bill is in conversation = 0

Mary

self is speaker = 0
 self is addressee = 1
 self is in conversation = 1
 John is speaker = 1
 John is addressee = 0
 John is in conversation = 1
 Bill is speaker = 0
 Bill is addressee = 0
 Bill is in conversation = 0

The properties in (9) update the domains of control for the participants which will be the bases for the interpretation of the pronoun *you*. As is shown earlier, in addition to the categorial and conditional properties, there need to be setting procedures relating to the pronoun *you* that help determine the current referent. These procedures are given in (10):

(10) John

self-is-addressee	x	you	::	self-is-current-referent
-self-is-addressee			::	-self-is-current-referent
Mary-is-addressee	x	you	::	Mary-is-current-referent
-Mary-is-addressee			::	-Mary-is-current-referent
Bill-is-addressee	x	you	::	Bill-is-current-referent
-Bill-is-addressee			::	-Bill-is-current-referent

Mary

self-is-addressee	x	you	::	self-is-current-referent
-self-is-addressee			::	-self-is-current-referent
John-is-addressee	x	you	::	John-is-current-referent
-John-is-addressee			::	-John-is-current-referent
Bill-is-addressee	x	you	::	Bill-is-current-referent
-Bill-is-addressee			::	-Bill-is-current-referent

As we can see, John's setting procedures will help determine that for him Mary is the current referent and Mary's setting procedures will help determine for her that she herself is the current referent.

When Mary speaks, there are again changes in the conditional properties of each communicating individual. Observe (11):

(11) John

self is speaker = 0
 self is addressee = 1
 self is in conversation = 1
 Mary is speaker = 1
 Mary is addressee = 0
 Mary is in conversation = 1
 Bill is speaker = 0
 Bill is addressee = 0
 Bill is in conversation = 0

Mary

self is speaker = 1
 self is addressee = 0
 self is in conversation = 1
 John is speaker = 0
 John is addressee = 1
 John is in conversation = 1
 Bill is speaker = 0
 Bill is addressee = 0
 Bill is in conversation = 0

The changed domains of control will determine that the *you* uttered by Mary in 'you know Sue and Bill are close friends' has John but not Mary as the current referent.

The uttering by Mary of Sue activates in the domains of control new properties relating to Sue, as listed in (12):

(12) John

Sue is speaker = 0
 Sue is addressee = 0
 Sue is in conversation = 0
 Sue is female = 1

Mary

Sue is speaker = 0
 Sue is addressee = 0
 Sue is in conversation = 0
 Sue is female = 1

The new properties are important in determining the referent at the time the pronoun *she* is uttered. Also procedures relating to *she* need to be set up, as in (13):

(13) John

-self-is-addressee x -self-is-speaker x self-is-female x she
 :: self-is-current-referent
 self-is-addressee v self-is-speaker v -self-is-female
 :: -self-is-current-referent
 -Mary-is-addressee x -Mary-is-speaker x Mary-is-female x she
 :: Mary-is-current-referent
 Mary-is-addressee v Mary-is-speaker v -Mary-is-female
 :: -Mary-is-current-referent
 -Bill-is-addressee x -Bill-is-speaker x Bill-is-female x she
 :: Bill-is-current-referent
 Bill-is-addressee v Bill-is-speaker v -Bill-is-female
 :: -Bill-is-current-referent
¹-Sue-is-addressee x -Sue-is-speaker x Sue-is-female x she
 :: Sue-is-current-referent
 Sue-is-addressee v Sue-is-speaker v -Sue-is-female
 :: -Sue-is-current-referent

Mary

-self-is-addressee x -self-is-speaker x self-is-female x she
 :: self-is-current-referent
 self-is-addressee v self-is-speaker v -self-is-female
 :: -self-is-current-referent
 -John-is-addressee x -John-is-speaker x John-is-female x she
 :: John-is-current-referent
 John-is-addressee v John-is-speaker v -John-is-female
 :: -John-is-current-referent
 -Bill-is-addressee x -Bill-is-speaker x Bill-is-female x she
 :: Bill-is-current-referent
 Bill-is-addressee v Bill-is-speaker v -Bill-is-female
 :: -Bill-is-current-referent
 -Sue-is-addressee x -Sue-is-speaker x Sue-is-female x she
 :: Sue-is-current-referent
 Sue-is-addressee v Sue-is-speaker v -Sue-is-female
 :: -Sue-is-current-referent

From (13) one can see that only Sue can be the referent of the pronoun *she*. Similarly, the referent of the pronoun *he* in Mary's 'it's only natural that he will want to come and visit her' can be determined by

¹ It is not hard to see that a potential problem exists just in case both Mary and Sue are neither speaker nor addressee. This problem is identical in nature to the point relating to the discussion of *his* later in this paper and will therefore not be discussed here.

referring to the relevant properties and procedures. The conditional properties, as is not hard to see, are not altered, except that the property of *Bill-is-male* needs to be activated, as in (14):

(14) John

Bill is male = 1

Mary

Bill is male = 1

To interpret the referent of the pronoun *her* in Mary's utterance, one only needs to replace the input *she* in (13) with the input *her*, since except for the difference in input, the properties and procedures are identical. (15) reflects this:

(15) John

-self-is-addressee x -self-is-speaker x self-is-female x her
 :: self-is-current-referent
 self-is-addressee v self-is-speaker v -self-is-female
 :: -self-is-current-referent
 -Mary-is-addressee x -Mary-is-speaker x Mary-is-female x her
 :: Mary-is-current-referent
 Mary-is-addressee v Mary-is-speaker v -Mary-is-female
 :: -Mary-is-current-referent
 -Bill-is-addressee x -Bill-is-speaker x Bill-is-female x her
 :: Bill-is-current-referent
 Bill-is-addressee v Bill-is-speaker v -Bill-is-female
 :: -Bill-is-current-referent
 -Sue-is-addressee x -Sue-is-speaker x Sue-is-female x her
 :: Sue-is-current-referent
 Sue-is-addressee v Sue-is-speaker v -Sue-is-female
 :: -Sue-is-current-referent

Mary

-self-is-addressee x -self-is-speaker x self-is-female x her
 :: self-is-current-referent
 self-is-addressee v self-is-speaker v -self-is-female
 :: -self-is-current-referent
 -John-is-addressee x -John-is-speaker x John-is-female x her
 :: John-is-current-referent
 John-is-addressee v John-is-speaker v -John-is-female
 :: -John-is-current-referent
 -Bill-is-addressee x -Bill-is-speaker x Bill-is-female x her
 :: Bill-is-current-referent
 Bill-is-addressee v Bill-is-speaker v -Bill-is-female
 :: -Bill-is-current-referent
 -Sue-is-addressee x -Sue-is-speaker x Sue-is-female x her
 :: Sue-is-current-referent
 Sue-is-addressee v Sue-is-speaker v -Sue-is-female
 :: -Sue-is-current-referent

When John starts, 'Are you going to meet him?', some of the conditional properties will be changed again, and it is only a matter of adjusting the domains of control according to the changes to interpret the referents of the pronouns *you* and *him* in John's utterance.

The several occurrences of the pronoun *I* in Mary's subsequent utterance can also be interpreted once the domains of control are adjusted according to the changes in the conditional properties. The last point I would like to talk about is the interpretation of the pronoun

his in Mary's utterance, 'I've promised to help Fred with his math'. Following the above human linguistic analysis, once the name *Fred* is uttered by Mary, relevant properties relating to Fred will also be activated in both John's and Mary's domains of control. See (16):

(16) John

Fred is speaker = 0

Fred is addressee = 0

Fred is in conversation = 0

Fred is male = 1

Mary

Fred is speaker = 0

Fred is addressee = 0

Fred is in conversation = 0

Fred is male = 1

Relevant setting procedures related to Fred will also need to be set up, as shown in (17):

(17) John

-Fred-is-addressee x -Fred-is-speaker x Fred-is-male x his

:: Fred-is-current-referent

Fred-is-addressee v Fred-is-speaker v -Fred-is-male

:: -Fred-is-current-referent

Mary

-Fred-is-addressee x -Fred-is-speaker x Fred-is-male x his

:: Fred-is-current-referent

Fred-is-addressee v Fred-is-speaker v -Fred-is-male

:: -Fred-is-current-referent

It is not hard to see that these procedures would make both Bill and Fred the referents of the pronoun *his*, but it is clear that both the communicating individuals understand that *his* refers to Fred, not to Bill. In view of this fact, human linguistics argues that there must be some kind of property in the two participants that tell them, so to speak, that only Fred is the referent of the pronoun. This means that in addition to the above listed properties associated to Bill and Fred, we have to add at least one more property so as to single Fred out as the referent. This property may be the inference from *I couldn't* that Mary is not intending to see Bill and the inference from *I've promised to help Fred with his math* that Mary will be with the referent of *his*. For these two inferences would rule out Bill as the referent of *his*, thus leaving Fred as the only possible referent in the domain of control. On the other hand, the property may be John and Mary's knowledge about the English structure *promise to help someone with something* to the effect that that something usually has to relate to the someone. Whatever is true, human linguistics will be able to incorporate the truth in its account.

Conclusion

Admittedly the report given above is not yet a complete human linguistic treatment of how people understand English pronouns. We are not yet able to provide a human linguistic treatment of how plural pronouns, definite pronouns, and many other anaphoric devices in English are used and understood. But we hope that through this paper people will have some idea about what a human linguistic approach is like. Even though the number of properties and procedures to be described are numerous, we believe that given enough time and man-

power, we will be able to account for how people use and understand English pronouns.

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CONTEXT, DEIXIS, AND ANAPHORA IN HUMAN LINGUISTICS

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The effect of context is always present when we communicate. It is clearly seen in the understanding of ambiguous words. The word "run" for example, has over one hundred senses, yet in context we can usually understand which one was intended. The role of context is crucial in pronominal reference. In figurative language the intended meaning always rests heavily on the context. The influence of context is so strong in everyday conversation that we can often supply the very word that the speaker wishes to use but cannot remember. Yet in spite of an abundance of easily available evidence, we have a poor understanding of these phenomena even after many years and many valiant attempts.

1. Background

Two ancient views of how the ambiguity of a pronoun like he, she, or it is resolved by the context have been enshrined in the dictionary. Webster's defines the antecedent of a pronoun as a word, phrase, or clause referred to by the pronoun. The view of context as the text preceding the ambiguous item, and the idea that this is "referred to," or that a copy of it has been "replaced," are so strongly entrenched in Western culture as to seem almost beyond question. Yet these are just two of the extant theories, and by no means the best ones.

Another theory of ambiguity uses the concept of grammatical level, which dates back at least to the Stoics of the second century B.C. A pair of phrases like a name/an aim are said to sound alike at a lower level, but have different meanings at a higher level (Hicks 1925:171). The concept of grammatical level provides an account of context as being in the abstract domain of grammar.

A somewhat different account of context explored several decades ago is provided by the concept of phrase-structure or immediate constituent analysis of sentences. Here occurrences of words are assigned to form-classes in terms of their participation in grammatical constructions. In the following sentence adapted from one found in the Congressional Record,

(1) He said that that that that man said was true.

the four occurrences of the word that belong to four different form-classes, thus resolving the ambiguity. Here context is

analyzed in terms of the grammatical constructions of the sentence.

The idea of context-sensitive grammar rules is another attempt to deal with context by grammatical means. Here context is seen as the preceding or following grammatical elements within a derivation that influence the selection of a given element.

Sometimes a concept of ellipsis is employed in explaining the role of situational context. When context relevant for determining the sense of a given word does not appear explicitly in the surrounding text, appropriate surrounding text is assumed and supplied by the grammarian as "understood," and then after it has been used in determining the sense of the given word, the assumed text is deleted by a process of ellipsis.

These theories form a textual, grammatical, logical strand that developed out of the prescriptive and descriptive grammatical tradition. They provide a static view of context as the surrounding text or the surrounding or containing grammatical structure of the sentence.

There is also a cognitive and dynamic strand. One such theory holds that pronouns and articles bring back to mind a previously existing concept. This idea dates at least to the second century Alexandrian grammarian Apollonius Dyscolus (Householder 1981), who treated anaphora in terms of second thought. In this conception things happen dynamically in time in the mind of the speaker or listener.

In literary criticism it is well known that the understanding of metaphor depends on the listener or reader and therefore a metaphor may be understood differently by different people. This acknowledges the importance of cognitive processing: "All through, of course, it is not etymology but how we take the words which settles these questions" (Richards 1936:121).

In sociolinguistics, concepts of social context are invoked to account for variation in the way people speak. In a creole continuum with a high prestige dialect, a low prestige dialect, and many intermediate ways of speaking, a person will speak differently to different people and on different occasions depending on the context of social factors in the interaction.

In artificial intelligence, some computer programs resolve ambiguity by appeal to the task that the program is carrying out. Here context is simulated as the relevant aspects of the problem domain.

One could continue with mention of psycholinguistics, anthropological linguistics, and other areas. But in spite of many insights into context, we still do not have an adequate

scientific theory of how people resolve ambiguity, how they can predict the very word that the speaker cannot remember, or how children learn in context.

We will be examining the facilities that human linguistics offers for treating contextual phenomena.

2. Human linguistics

In human linguistics the focus is on people and their linguistic properties rather than on language or grammar, which do not figure in the theory at all. It is actually not speech-sounds, words, and such that travel from one person to another when they communicate, but only the sound waves of speech or other means of energy flow. We thus have the picture of Figure 1.

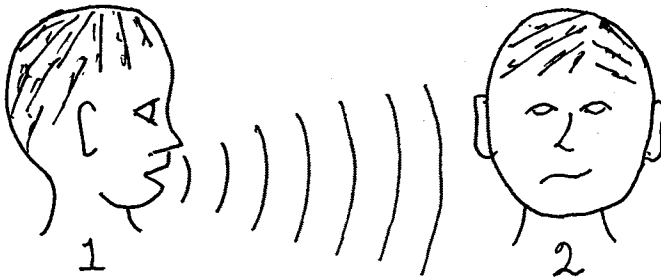


Figure 1. Two people communicating by sound waves.

Here the sound waves or other types of energy flow are produced by the operation of mechanisms in individual 1. One of our tasks as linguists is to achieve a scientific understanding of these mechanisms. The sound waves or other types of energy are received and understood by individual 2 through the operation of mechanisms in individual 2. Another of our tasks as linguists is to achieve a scientific understanding of these mechanisms as well. We can borrow from physics a scientific understanding of the sound waves themselves and their propagation through the air, the light waves accompanying a gesture, the pressure of a handshake, and other means of communicatively significant energy flow. An additional task for linguists is to understand the group phenomena involved in a conversation, and phenomena of the larger communities to which the individuals and smaller groups belong.

We know that the communicative activities of speakers and hearers are carried out by the nervous system, including the brain, and by the organs of speech and hearing. This may eventually be understood through neurophysiology and molecular

chemistry. For now, however, there is much that linguists can do to shed light on the matter. Recall that chemistry was a science long before anything was known about the quantum mechanical nature of the chemical bond, and genetics was a science long before anything was known about the molecular basis of heredity.

As linguists we can create a science that studies people from a linguistic point of view. We can set up properties of speakers and hearers that account for how they communicate. These properties will be postulated on the basis of observed communicative and noncommunicative behavior. They will thus have the same scientific status as the valence properties of chemical substances and the genetic properties of biological organisms that were also postulated on the basis of macroscopic data from observable physical objects.

Suppose you are visiting a friend who has a young daughter. He says to you, "She doesn't talk yet, but she understands everything." "How do you know?" you ask. "Watch," he says, and he wads up a piece of paper and says, "Here, Sally, put this in the fireplace." The child takes the paper, carries it to the fireplace, and throws it in. As linguists we can use the observed communicative behavior of the father and the observed resulting noncommunicative behavior of the child as evidence for postulating that she has a number of linguistic properties described colloquially as being able to understand what her father said. Further observation of the child would allow us to specify in greater detail her linguistic properties and perhaps something of how they are structured, even if she is never observed to speak.

Such properties are set up ultimately on the basis of recurrent observed similarities and differences of people and valid reasoning from these observed similarities and differences. This research paradigm resembles the familiar one used to set up properties of presumed linguistic entities such as phonemes and morphemes. However, human linguistics enjoys the advantages of secure scientific foundations; it can test its theories against physical objects of the real world, namely people. As has been shown elsewhere (Yngve 1986), human linguistics rests on three fundamental observationally-based laws instead of on unsupported assumptions.

Some may suggest that we take the linguistic properties of a person to be an internal grammar. This is inappropriate and it won't work. It would prejudice our conclusions without warrant since grammar deals with words, sentences, and other objects in the domain of language whereas we are interested in the properties of people in the real physical world. Since this shortcut is not available to us, we will have to start from scratch and carefully justify the properties on the basis of observations of the people themselves. If the result comes out the same, fine, but if not we will have to accept that it is different.

The new theory can be characterized simply as a state theory. People are represented individually as systems called communicating individuals. Groups of people and the relevant parts of the environment are represented as systems called linkages. Communicating individuals and linkages are defined as dynamic causal state systems that are characterized in terms of their communicatively relevant properties. These properties change dynamically as communicative behavior takes place.

Human linguistics has a scientifically justified notation in which to formulate communicative models of people. This notation accommodates observed complexity in terms of a large number of postulated properties, and unlike grammatical and semiotic theories it has a built-in mechanism for handling context.

3. Computer simulation

Because of the complexity of communicative phenomena, computer modeling is a virtual necessity for handling the many details and for checking that theoretical statements actually agree with observation. The notation of the theory can serve as the basis for testing by computer simulation in a manner somewhat parallel to the method of grammar testing with which we have much experience (Yngve 1962, 1967).

A pilot computer program has been written by the author that accepts substantially the same notation as given in Yngve (1986). Some uses of computer modeling in the research will be discussed in other papers to be presented at this conference.

4. Context, deixis, and anaphora

In human linguistics, context is represented in the changing properties of individuals and groups during communicative interactions. These dynamically changing properties stand in the role of causes of communicative behavior. Therefore the theory directly accommodates the influence of context on communicative behavior.

To see how this works, suppose two people are standing in front of a bookshelf of plays by a noted playwright. One of them takes a play off the shelf and says:

- (2) This was his most successful.
- (3) It had a long run.

Both the speaker and the hearer have properties related to what plays are. These properties are called repertorial properties because they are part of the repertoires of the speaker and the hearer.

When the speaker takes the play off the shelf, his properties

also include a focus of attention on this play. These properties are called conditional properties. We say that the concept of the play is in his domain of control, which means that it is part of the relevant context for him. When he says this, he is referring to the concept of this play in his domain of control. We say that certain procedures among his properties have executed and changed the conditional properties to reflect that the reference has been made.

The hearer also sees the play in the speaker's hand, and thus a concept of the play is in his domain of control also. When he hears the sound waves of this, certain procedures among his properties execute and change his conditional properties to register a reference to his concept of the play.

We have modeled what the tradition would speak of as a deictic reference. In both cases the act of referring tags the concept of the play as currently salient in the domain of control, indicating that it is available to enter into the understanding of the rest of the utterance. For both the speaker and the hearer the reference of this is understood in relation to the context in the domain of control.

Now let us look at

(3) It had a long run.

At the end of the previous utterance the domains of control of both speaker and hearer are left with the concept of the play no longer available for understanding the rest of the utterance, but still salient in that it is available to be referred to by it. The anaphoric reference here by it is similar to the deictic reference by this in that in both cases the domain of control already contains a concept tagged as available to that kind of reference. When the procedures execute in connection with the reference by it, the concept of the play in each domain of control is tagged again to indicate that it is available for understanding the rest of the utterance. This correlates with the concept of subject in the linguistics of language.

Now how about the ambiguity of run? Very simple. The concept of this play is still salient in each domain of control. Of all the things that plays can have, the uttering of run or the receiving of the sound waves of run unambiguously selects and refers to just one of them, namely Webster's noun sense 4d: "an unbroken course of performances or showings." The other hundred-odd senses of run simply don't come into the picture at all.

5. Anaphora and the definite article

It has been known from at least the second century work of Apollonius Dyscolus that the definite article requires an

anaphoric treatment. This is true for English as well as Greek. Sometimes a person or thing will be introduced in a conversation with the indefinite article a or an, and then later brought back anaphorically with the definite article. Thus near the beginning of a videotape made in the laboratory, Hazel introduces a concept for the first time with a beginning state, and Charles refers to it again with the beginning state:

2008 Hazel: something quite interesting happened in a psych course last quarter where the - uh - instructor was talking about problem solving, and he uses the example of somebody working for a thesis and he says there's a beginning state --

2009 Charles: Uh huh.

2010 Hazel: and an ending state - and the arrow between - is where most uh - degree candidates are - and uh - it's anxiety producing unless you can figure out where the arrow is (laugh).

2011 Charles: Ah! Yes, well, if I could find where the beginning state was I would have a lot less anxiety.

First, in 2008 a concept referred to by a beginning state is brought forward in Hazel's domain of control, and as a result of her referential activity a related concept is brought forward in Charles' domain of control. Then in 2011 Charles can refer to the concept again as a definitely known specified concept, bringing it back in a sort of anaphora by the expression with the definite article the beginning state.

6. The interconnection of concepts

Actually, the definite article is more often associated with the first mention or introduction of a concept rather than its second mention. We see this in 2008, where a new concept is introduced into the domain of control with a definite article by the - uh - instructor. Its definiteness seems clear because normally one would expect just one instructor in a psych course.

The analysis of this example would involve the introduction into the domain of control of a concept of a psych course, tagged as associated with Hazel, probably as a student, and taking place last quarter. The concept of a psych course in the more permanent (repertorial) properties also includes expectations that there would be an instructor, students, class sessions, and the like, and these associated concepts are thereby changed to a state of near readiness to be brought into the domain of control. Then when the reference with a definite article to an instructor takes place, it is this concept of an instructor that is introduced into the domain of control and tagged as the one associated with the psych course. This can be viewed as a sort of anaphora where the concept is not actually introduced for the first time, but promoted into the domain of control from its state of near

readiness. Our videotapes provide many analogous examples where referring to one concept brings others into near readiness for reference.

The phenomena associated with the definite article reveal the existence of a complex dynamic apparatus of connectedness between concepts and provide an important tool for semantic analysis in human linguistics. Evidence can be exhibited that when concepts such as psych courses are referred to, they bring other concepts into a state of near readiness, in this case, instructors. This provides observational means for analyzing the structure of interrelations and connections between concepts in the repertorial properties. Since the definite article is of frequent occurrence in connected discourse, it should be of considerable use in this way as a research tool.

This anaphoric reference to the instructor provides better evidence for the structure of the repertorial properties than possible occurrences of the instructor in a psych course, where the relation between the concepts is made explicit and thus may be special to the particular situation. The anaphoric case provides evidence for permanently encoded relations in the repertorial properties of the individuals involved.

These methods for studying the interconnections of concepts in the repertorial properties bring into the realm of science things that go back at least to 1700 in John Locke's association of ideas, and are often approached through speculation, intuition, and introspection.

7. Human linguistics research

Working out this new form of linguistics is an exciting adventure in a whole new world. A great feeling of freedom comes from moving away from grammar. We finally have a built-in mechanism for taking the context into account. This relaxes a number of constraints that have tormented us for too long a time. The freedom to be able to treat nonacoustic means of communication together with speech in the same theoretical framework opens up important avenues of research. The freedom to use nonlinguistic phenomena directly as data for shedding light on linguistic issues leads to some very powerful research methods.

Because results available from the linguistics of language may not translate easily or at all into the new domain, there is much work to be done by as many linguists as become interested. Since one is building a true science, careful work that has been justified against publicly observable evidence may never have to be redone and may never be superseded.

Sectarianism will disappear from linguistics. There is no room in a true science for gurus or charismatic individuals proclaiming the latest dogma or party line. We test our results

instead against observational data.

Human linguistics moves linguistics out of its traditional autonomy and isolation and connects it to many other disciplines. It links the psychological and social sciences together in a reductive hierarchy with the rest of science (Yngve in-press), and it advances the humanities by providing relevant scientific theory that respects the uniqueness of the individual and the uniqueness of individual performances.

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XII

COMPUTATIONAL LINGUISTICS

A GENERAL LINGUISTIC AUTOMATIC SYSTEM
-- illustrated with Korean and English
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O. INTRODUCTION

The present paper describes an attempt to design a computational model of decoding or interpretation. In dealing with the process of decoding, this project attempts to implement Lamb's (1964) suggestion that linguistic information should not be incorporated into the program itself as the result would be an ad hoc rather than a general procedure for the particular information. Specifically, the present paper is concerned with semological information and with how it should be organized in view of the essential structural difference between the linguistic information system and the computer procedure.

All linguistic information needed for the process of decoding can be stated in the form of dictionary entries (Lamb 1985, 1987). As far as tactics is concerned, the program described in this paper implements the Active Chart method which originated from Kaplan's General Syntactic Processor (1973) and was elaborated by Winograd (1983).

1. Dictionary Look-Up for Syntactic Decoding.

The general decoding process for written language involves decoding from graphemic representations to conceptual representations. The algorithm involves searching through the dictionary entries which contain pertinent linguistic information for each pair of levels. The present paper suggests the use of six kinds of dictionaries in accordance with Lamb's (1987) notion. The six kinds of dictionaries include five sub-dictionaries and one Master Dictionary which consists of information related to any level of the linguistic structure, e.g. morphemic, lexemic and sememic. The five sub-dictionaries include one dictionary for the level of word structure (the Morphemic Supplement), two dictionaries for the level of phrases (the Lexemic Supplement I and II) and another two dictionaries for the level of clause (the Sememic Supplement I and II). Let us now examine the function of the dictionaries (Morphemic Supplement, Master Dictionary and Lexemic Supplement I and II) needed to produce a syntactic structure tree.

1.1. The Morphemic Supplement and the Master Dictionary.

The great amount of difference between the morphemic and graphemic strata is taken care of by the Morphemic Supplement, which specifies the realizational relationship between a graphemic word and a morpheme or string of morphemes. However, the current program does not discuss the function of this Morphemic Supplement. The Master Dictionary Module associates a morpheme with a grammatical terminal symbol or as a 'lexical category' (to use Winograd's (1983) term). This Master Dictionary Module also includes syntactic (e.g. Count/Mass) and semantic properties which reside somewhere in a semantic relational network. Semantic properties, however, are retrieved only to compare the properti(es) of participant(s) with that/those of presupposed participant(s) of a specific process. We will discuss these properties further in the Sememic Supplement II section.

The general format of the Master Dictionary is as follows:

<u>#M. Word</u>	<u>Lexical Cat.</u>	<u>Syn. Pro.</u>	<u>Sem. Pro.</u>
Ex. APPLE	NOUN	Count	Ed-solid
DRINK	Vt		Cat3, Cat4
EAT	Vt		Cat1, Cat2
I	NOUN	Count	HUMAN
WATER	NOUN	MASS	ED-liquid

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.
.

Cat1 (P1.Human-P2.Ed.solid)
Cat2 (P1.Ani-P2-Ed.solid)
Cat3 (P1.Human-P2.Ed.liquid)
Cat4 (P1.Ani-P2.Ed.liquid)
Cat5 (P1.Human-P2.NON.ED)
Cat6 (P1.Ani-P2.NON.ED)

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(The reason to store semological information in the Master dictionary, rather than in the semicon supplement, will be explained later.)

1.2. The Lexemic Supplement I

The Lexemic Supplement I treats a complex lexeme to be treated as a unit. For example, the Eng. complex lexeme IBM PC is identified as a single noun with the aid of the Lexemic Supplement I. Due to limitation of time and space, however, the current paper does not go through the procedure for the Lexemic Supplement I.

1.3. The Lexemic Supplement II

The dictionary entries at this level produce a syntactic structure tree by combining the activated lexical categories. The Lexemic Supplement II includes general dictionary entries which function like the syntactic rules of other systems. They direct the phrase structure analysis of the input string, and an input sentence such as the salesman sold the IBM PC will produce a syntactic structure tree using general entries in the Lexemic Supplement II.

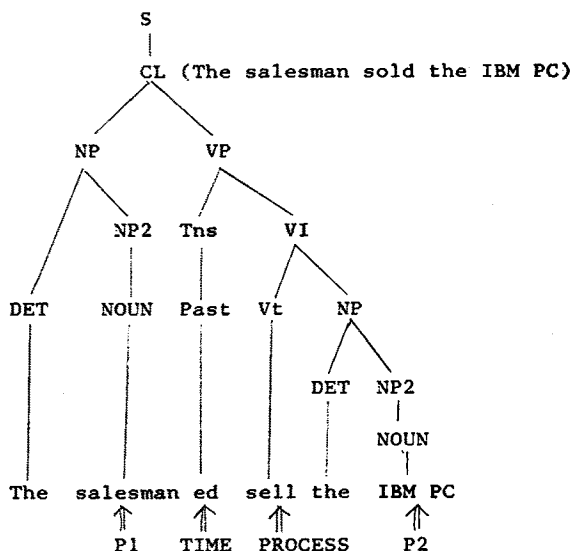
2. Dictionary Look-Up for Conceptual Representations.

The procedure of syntactic decoding described above is carried out by consulting dictionaries such as the Master Dictionary and the Lexemic Supplement I and II. However a properly conceived automatic decoding system should also be able to handle semological information. This process would involve building a semantic structure representation for the conceptual level. The crucial question is how to go about this without mixing linguistic information with the computer procedure. It is the primary purpose of this paper to suggest that we can solve this problem by applying the same strategy as that employed for building a syntactic structure tree. The output of the lower-level dictionary enters as the input of the immediate upper-level dictionary. Likewise the Sememic Supplement I enables us to decode the output of the syntactic parsing tree to give a semantic structure tree.

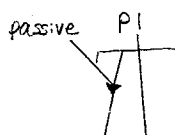
2.1. The Sememic Supplement I

The Sememic Supplement identifies the role relationships with respect to specific process in a general way and determines the organization of a proposition, e.g. process, participants, time, etc.

2.1.1. In an active sentence, the first NP string is identified as P1 (Participant 1), the second NP string is identified as P2 (Participant 2) and the main verb as the process. How can this identification be made by the computer? As one possible, but not ad hoc, way, we can keep track of the path of nodes appearing in the parsing tree. Just as we list the possible, general ways to recognize non-terminal symbols, e.g. NP, VP, CL, etc. in the Lexemic Supplement II so we list possible ways to identify process, participants, etc. Of several possibilities, a choice depends on the syntactic tree of an input sentence. In the example above, the salesman sold the IBM PC, the process, subject, P1, P2 and Time are identified by keeping track of nodes in the syntactic tree (See the Eng. output 1.) Consider the following syntactic tree:



Here, the linear notation for the identification of process and participants can be represented as follows for the sememic entry, which takes care of the Ordered-Or node in the relational networks. In the network, active is chosen if passive is not found -- the marker 'S' means 'if not passive'.



PROCESS = S.CL.VP.VI.Vt
 SUBJ = S.CL.NP2.NOUN
 P1 = S.CL.NP2.NOUN
 P2 = S.CL.VP.VI.NP2.NOUN
 TIME = S.CL.VP.Tns

(The sameness of P1 and Subject indicates that the syntactic realization comes as the form of an active sentence.)

2.1.2. What about in the case of passives? In the case of passives, the optional NP string in the VP should be identified as P1 and the NP string occurring as object of 'by' that immediately comes under CL in a syntactic parsing tree should be identified as P2. The reversed word order of P1 and P2 can also be correctly identified by giving a condition to the Sememic Supplement I. The condition can be interpreted as follows: "If the lexeme node, 'Passive' is found in the syntactic tree, identify the NP string after 'by' in the VP as P1 and identify the first NP string as P2." For example, if the input sentence were IBM PC was sold by the salesman, P1 and P2 would be identified by the aid of the following Sememic Supplement I entries which also imply the Ordered-Or node in the relational networks -- the marker '*' means 'if the following condition is

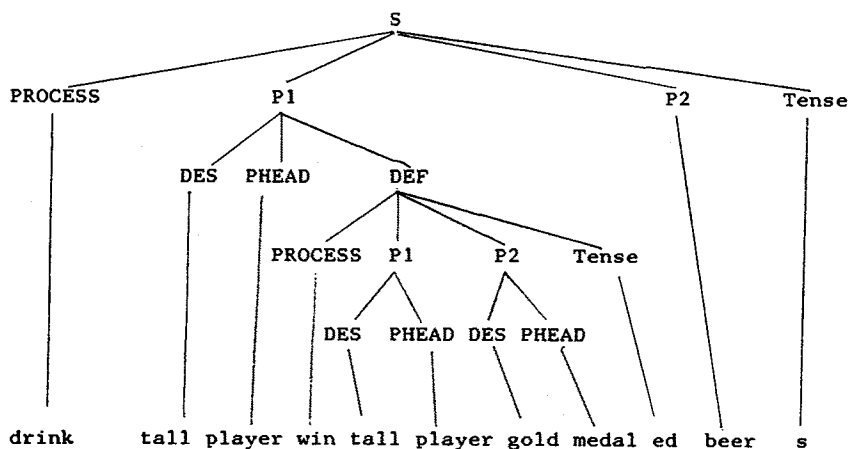
found': (See the Eng.output 2)

```
pass-cond = S.CL.VP.VI.PASS
SUBJ = S.CL.NP2
P1 = *pass-cond S.CL.VP.PP.AGPP.NP2
P2 = *pass-cond S.CL.NP2
(The equality of SUBJ and P2 is realized as the lexeme
passive which in turn is realized as morphemes be and pas1.)
```

2.1.3. If the P1 or the P2 contains an embedded clause, e.g. relative clauses in the case of English and unconjugated clauses in the case of Korean, the complex participant needs to be specified further for the conceptual representation. Suppose that we get the pre-conceptual representation as follows for the sentence the tall player who won the gold medal drinks beer:

```
(PROCESS.drink)
(P1.the tall player who won the gold medal)
(P2.beer)
(Time.present)
```

Here, the P1 the tall player who won the gold medal needs to be specified further since it contains another complete clause. Since the adjective tall comes in the mode of 'describer' for the P1 and the restrictive relative clause comes in the mode of 'definer' or 'identifier' for the P1, we can draw the semantic structure tree as follows:



Keeping in mind that we used an algorithm to keep track of the path of a syntactic structure tree to identify participants, process, etc, we can identify Descriptor, P1, P2, Process within Definer in the same way (See the Eng. output 7 & 8.)

Describer = P1.NP.NP2.ADJ (Describer is the ADJ in P1)

PHEAD = P1.NP.NP2.NOUN (PHEAD is the NOUN in P1)

Definer = P1.NP.NP2.RC

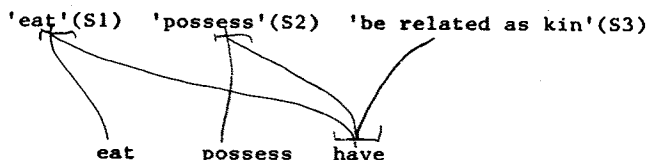
clause Definer

(The Definer goes through the same procedure to identify process and participants of a main clause.)

2.2 The Sememic Supplement II.

An input with a combination of participants and process that is not cognitively realistic (e.g. %I ate the chopstick) should not be accepted as a conceptual representation (See the Eng. output 3 & 8). Therefore, before the final conceptual representation of a given sentence is shown, the semotactic properties of the presupposed arguments of a specific process should be checked. We need to check if the properties of participants fit to GENERAL SEMOTACTIC PROPERTIES of arguments that a specific process requires. For example, the process eat presupposes that the participants have the property 'animal' or 'human being' as P1 and presupposes that the participants have the property 'edible things that are solid' as P2. Therefore, the general semotactics of the lexeme eat can be written as (P1.ANIMAL_P2.ED-SOL) or (P1.HB_P2.ED-SOL). In the sentence above, the semotactic property of the lexeme chopstick (NON-ED) conflicts with that of the required P2 of the process eat (ED) and is therefore marked as anomalous.

This approach is also helpful in disambiguating cases of polysemy. The lexeme have realizes more than one sememe. Even though Webster's dictionary contains more than 15 meanings for the lexeme of have, let us say that it realizes three sememes with the meaning of 'eat' (S1:I have lunch.), 'possess' (S2:I have money) and 'be related as kin' (S3:I have an aunt.). Of several possible sememes, the choice of a single sememe is made by referring to properties of arguments since each process has its own general semotactic properties. For example, if the lexeme have represents S1, the property of the following argument must be 'edible things', if it represents S2, the property of the following participant should be 'concrete objects' and if it represents S3, the participant 2 must be 'human being'. That is, the lexeme have which realizes S1 has the same semotactic properties as the lexeme eat and the lexeme have which realizes S2 has the same semotactic properties as the lexeme possess. Consider the following network:



To implement these interlocking nodes for the computer entry, we list possible combinations of properties of required participants and make the process to point to the category of combinations. For instance, the required properties of the lexeme eat and the lexeme have (S1) are the same so we make the entries for both of these verbs point to the same category, which is the category having the property 'animal' or 'human being' as P1 and 'edible things' as P2.

In the format of the Master Dictionary, if you will recall, we assigned the category number for the process instead of specifying the possible properties of participants every time and also the dominant properties for the participant. Here, someone might ask why we put information about semotactics in the Master Dictionary, rather than in the Sememic Supplementary dictionary. The Master Dictionary which includes semotactic information allows us to have simpler dictionary entries and to avoid copying the same lexeme symbols. If we included sememic properties for each lexical item in the Sememic Supplement II, we would have to duplicate all morphemic words of the Master Dictionary (ex. eat, I, rice, etc.) for the entry of the Sememic Supplement II.

This being the case, what type of information should be stored in the Sememic Supplement II? The main function of the Sememic Supplement II is to check whether the properties of participants match those of arguments that a specific process presupposes. This matching process is completed by retrieving the information about the semotactic properties in the Master Dictionary and by comparing the retrieved properties of a process with those of P1 and P2. This comparison of semantic properties is made with the aid of the following rules in the Sememic Supplement II:

```
S.PROCESS = (S.P1.PHEAD S.P2.PHEAD)
S.P1.DEF.PROCESS = (S.P1.DEF.P1 S.P1.DEF.P2)
(This rule is for the comparison of process and participants
in an embedded clause.)
.
.
.
```

Here, we retrieve only the semantic properties from the master dictionary to compare the properties of participants with the required properties of a process. The path S.PROCESS retrieves (a) number(s) which consist(s) of possible properties or blocking properties of P1 and P2 (ex. Cat1, Cat2, etc.). The path S.P1.PHEAD retrieves the property of P1 and the path S.P2.PHEAD retrieves the property of P2. For instance, the sentence I ate rice would produce the semotactic information as (PROCESS.eat) (P1.I) (P2.rice) (Time.past) at the conceptual level. The process eat includes as the semantic properties Cat1 and Cat2 which consist of (P1.Human_P2.Ed) and (P1 Ani_P2.Ed),

respectively. The (P1.I) contains the property 'human being' and the (P2.rice) contains 'edible things.' Then, according to the format described above, Cat1 would be matched with the properties of P1 and P2 as follows:

Cat1 (P1.Human_P2.Ed) = (P1.Human P2.Ed)

Since the properties of both sides do not conflict with each other, the conceptual representation for this input sentence can cognitively be possible. On the other hand, the sentence %I ate the chopstick shows conflict between the properties as shown below and is therefore rejected as unmatched properties.

%Cat1 (P1.Human_P2.Ed) = (P1.Human P2.Non-Ed)

To conclude, we hope to have shown the organization of dictionaries that are separated from the program. Especially, we have focussed on the function of the Sememic Supplements I and II.

FOOTNOTES

ABBREVIATIONS

Ani:Animal
CL:Clause
DES: Describer
DEF:Definer
Ed:Edible
M.Word:Morphemic Word
Non-Ed:Non-Edible
PHEAD:Participnat Head
P1:Participant 1
P2:Participant 2
Pap1:Participle
SUBJ:Subject
Syn.Pro:Syntactic Properties
Sem.Pro:Semantic Properties
Tns:Tense

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>> 1. The salesman sold the IBM PC.

<The parsed list>

```
(S (DS (C1 (NP (DET (Def THE)))
              (NP2 (NOUN SALESMAN))))
  (VP (Tns (past ED))
      (VI (Vt SELL)
          (NP (DET (Def THE))
              (NP2 (NOUN IBM PC)))))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS SELL)
        (SUBJ (PHEAD SALESMAN))
        (PART1 (PHEAD SALESMAN))
        (PART2 (PHEAD IBM PC))
        (Tense ED)))
```

>> 2. The IBM PC was sold by the salesman.

<The parsed list>

```
(S (DS (C1 (NP (DET (Def THE)))
              (NP2 (NOUN IBM PC))))
  (VP (Tns (past ED))
      (VI (VI (PASSIVE (Aux-Be BE))
              (papl ED))
          (Vt SELL))
      (PP (AGPP (nPPAG BY))
          (NP (DET (Def THE))
              (NP2 (NOUN SALESMAN)))))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS SELL)
        (SUBJ (PHEAD IBM PC))
        (PART1 (PHEAD SALESMAN))
        (PART2 (PHEAD IBM PC))
        (Tense ED)))
```

>> 3. The boy ate the chopstick.

<The parsed list>

```
(S (DS (C1 (NP (DET (Def THE))
              (NP2 (NOUN BOY))))
  (VP (Tns (past ED))
      (VI (Vt EAT)
          (NP (DET (Def THE))
              (NP2 (NOUN CHOPSTICK))))))
```

ERROR>> Unmatched Properties

>> 4. The boy gave her a book.

<The parsed list>

```
(S (DS (C1 (NP (DET (Def THE))
              (NP2 (NOUN BOY))))
  (VP (Tns (past ED))
      (VI (BIVERS GIVE)
          (NP3 (NP (NP2 (NOUN HER))))
          (NP4 (NP (DET (InDef A))
                  (NP2 (NOUN BOOK)))))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS GIVE)
        (SUBJ (PHEAD BOY))
        (PART1 (PHEAD BOY))
        (PART2 (PHEAD BOOK))
        (PART3 (PHEAD HER))
        (Tense ED)))
```

>> 5. The boy gave a book to her.

<The parsed list>

```
(S (DS (C1 (NP (DET (Def THE)))
              (NP2 (NOUN BOY))))
   (VP (Tns (past ED))
        (VI (VI (BIVERB GIVE))
              (NP (DET (InDef A))
                  (NP2 (NOUN BOOK))))
        (PP (DATPP (nPPDAT TO))
              (NP (NP2 (NOUN HER))))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS GIVE)
        (SUBJ (PHEAD BOY))
        (PART1 (PHEAD BOY))
        (PART2 (PHEAD BOOK))
        (PART3 (PHEAD HER))
        (Tense ED)))
```

>> 6. We loved Korea and they loved America.

<The parsed list>

```
(S (DS (C1 (NP (NP2 (NOUN WE))))
   (VP (Tns (past D))
        (VI (Vt LOVE))
        (NP (NP2 (NOUN KOREA))))))
   (CONJ AND)
   (C2 (C1 (NP (NP2 (NOUN THEY)))
        (VP (Tns (past - D))
              (VI (Vt LOVE))
              (NP (NP2 (NOUN AMERICA))))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS LOVE)
        (SUBJ (PHEAD WE))
        (PART1 (PHEAD WE))
        (PART2 (PHEAD KOREA))
        (Tense D))
   (CL2 (PROCESS LOVE)
        (SUBJ (PHEAD THEY))
        (PART1 (PHEAD THEY))
        (PART2 (PHEAD AMERICA))
        (Tense D)))
```

>> 7. The tall player who won the gold medal drinks beer.

****<The parsed list>****

```
(S (DS (C1 (NP (DET (Def THE)))
              (NP2 (ADJ TALL))
              (NP2 (NOUN PLAYER))
              (RC (RP WHO))
              (SUBCL (VP (Tns (past ED)))
                    (VI (Vt WIN))
                    (NP (DET (Def THE)))
                    (NP2 (ADJ GOLD))
                    (NP2 (NOUN MEDAL)))))))
  (VP (Tns (pres S)))
  (VI (Vt DRINK))
  (NP (NP2 (NOUN BEER))))))
```

****< Conceptual Representation >****

```
(S (CL1 (PROCESS DRINK)
        (SUBJ (DES TALL)
              (PHEAD PLAYER)
              (DEF (PROCESS WIN)
                   (PART1 PLAYER)
                   (PART2 (DES GOLD)
                          (PHEAD MEDAL))
                   (Tense ED)))
        (PART1 (DES TALL)
              (PHEAD PLAYER)
              (DEF (PROCESS WIN)
                   (PART1 PLAYER)
                   (PART2 (DES GOLD)
                          (PHEAD MEDAL))
                   (Tense ED)))
        (PART2 (PHEAD BEER))
        (Tense S)))
```

>> 8. The tall player who won the gold medal eats beer.

<The parsed list>

```
(S (DS (C1 (NP (DET (Def THE)))
              (NP2 (ADJ TALL))
              (NP2 (NOUN PLAYER))
              (RC (RP WHO))
              (SUBCL (VP (Tns (past ED)))
                    (VI (Vt WIN))
                    (NP (DET (Def THE)))
                    (NP2 (ADJ GOLD))
                    (NP2 (NOUN MEDAL))))))))))
  (VP (Tns (pres S))
    (VI (Vt EAT))
    (NP (NP2 (NOUN BEER))))))
```

ERROR>> Unmatched Properties

>> 9. I will like the boy who likes my cat.

<The parsed list>

```
(S (DS (C1 (NP (NP2 (NOUN I))))
      (VP (Tns (fut WILL))
          (VI (Vt LIKE))
          (NP (DET (Def THE))
              (NP2 (NOUN BOY))
              (RC (RP WHO))
              (SUBCL (VP (Tns (pres S))
                        (VI (Vt LIKE))
                        (NP (NP2 (ADJ MY))
                          (NP2 (NOUN CAT))))))))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS LIKE)
        (SUBJ (PHEAD I))
        (PART1 (PHEAD I))
        (PART2 (PHEAD BOY)
              (DEF (PROCESS LIKE)
                  (PART1 BOY)
                  (PART2 (DES MY)
                        (PHEAD CAT))
                  (Tense S)))
        (Tense WILL)))
```

>>swuyengeyse kum meydalul ttan sonyenun hankwuk chwulsinul cohahanta.
 'The boy who won the medal in swimming likes people from Korea.'

The parsed list

```
(S (CL (NP (NP2 (UADJ-CL (CL (VP (ADJUNCT (ADV (LADV (NP2 (NOUN SWUYENG)))
                                (nAdL EYSE))))
                                (ADJUNCT EMPTY)))
      (VI (NP (NP2 (NOUN KUM MEYDAL)))
          (nM (nObj UL)))
          (Vt TTA)))
      (vV EMPTY)))
      (PapLM (PasFM N))))
      (NOUN SONYEN)))
      (nM (nTop UN)))
      (VP (ADJUNCT EMPTY))
      (VI (NP (NP2 (NOUN HANKWUK CHWULSIN)))
          (nM (nObj UL)))
          (Vt COHAHA)))
      (vV (Tns (PreT N))))))
      (DS (SE (Dec-N TA))))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS COHAHA)
        (TOPIC (PHEAD SONYEN)
                (DEF (PROCESS TTA)
                      (PART1 SONYEN)
                      (PART2 (PHEAD KUM MEYDAL))
                      (LOC (PHEAD SWUYENG))))
        (PART1 (PHEAD SONYEN)
                (DEF (PROCESS TTA)
                      (PART1 SONYEN)
                      (PART2 (PHEAD KUM MEYDAL))
                      (LOC (PHEAD SWUYENG))))
        (PART2 (PHEAD HANKWUK CHWULSIN))
        (Tense N)))
```

>> nay tongsayngun papul mekko nanun sakwalul mekessta.
 'My younger sister/brother ate rice and I ate an apple.'

The parsed list

```
(S (CL (NP (NP2 (UADJ (UADJ NAY)))
            (NP2 (NOUN TONGSAYNG)))
      (nM (nTop UN)))
      (VP (ADJUNCT EMPTY))
      (VI (NP (NP2 (NOUN PAP)))
          (nM (nObj UL)))
          (Vt MEK)))
      (vV EMPTY)))
      (DS (CONJ (Conj KO)))
      (S (CL (NP (NP2 (NOUN NA)))
            (nM (nTop NUN)))
          (VP (ADJUNCT EMPTY))
          (VI (NP (NP2 (NOUN SAKWA)))
              (nM (nObj LUL)))
              (Vt MEK)))
          (vV (Tns (PasT ESS))))))
      (DS (SE (Dec-N TA))))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS MEK)
        (TOPIC (DES NAY)
                (PHEAD TONGSAYNG)
                (PART1 (DES NAY)
                        (PHEAD TONGSAYNG)
                        (PART2 (PHEAD PAP)))
        (CL2 (PROCESS MEK)
              (TOPIC (PHEAD NA))
              (PART1 (PHEAD NA))
              (PART2 (PHEAD SAKWA))
              (Tense ESS)))
```


>>pika omyen nanun cipulo kakeyssta

'It rains. I will go home.'

<The parsed list>

```
(S (CL (NP (NP2 (NOUN PI)))
      (nM (nSubj KA)))
  (VP (ADJUNCT EMPTY)
      (VI (V1 O)))
      (vV EMPTY)))
(DS (CONJ (cAdCD MYEN)))
(S (CL (NP (NP2 (NOUN NA)))
      (nM (nTop NUN)))
  (VP (ADJUNCT (ADV (DADV (NP2 (NOUN CIP)))
                    (nAdd ULO)))
      (ADJUNCT EMPTY))
      (VI (V1 KA)))
      (vV (Tns (FutT KEYSS))))
(DS (SE (Dec-N TA))))
```

< Conceptual Representation >

```
S (CL1 (PROCESS O)
  (SUBJ (PHEAD PI))
  (PART1 (PHEAD PI)))
(CL2 (PROCESS KA)
  (TOPIC (PHEAD NA))
  (PART1 (PHEAD NA))
  (Tense KEYSS)
  (DIR (PHEAD CIP)))
```

>>4cipulo kacamaca nanun papul mekessta.

'As soon as I went home. I ate rice.'

<The parsed list>

```
(S (CL (VP (ADJUNCT (ADV (DADV (NP2 (NOUN CIP)))
                    (nAdd ULO)))
          (ADJUNCT EMPTY))
      (VI (V1 KA)))
      (vV EMPTY)))
(DS (CONJ (cAdMT CAMACA)))
(S (CL (NP (NP2 (NOUN NA)))
      (nM (nTop NUN)))
  (VP (ADJUNCT EMPTY)
      (VI (NP (NP2 (NOUN PAP)))
          (nM (nObj UL)))
      (Vt MEK)))
      (vV (Tns (PastT ESS))))
(DS (SE (Dec-N TA))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS KA)
  (DIR (PHEAD CIP)))
  (CL2 (PROCESS MEK)
    (TOPIC (PHEAD NA))
    (PART1 (PHEAD NA))
    (PART2 (PHEAD PAP))
    (Tense ESS)))
```

>>5nanun halmenieykey sakwalul cuessta.

'I gave an apple to the grandma or I gave the grandma an apple.'

<The parsed list>

```
(S (CL (NP (NP2 (NOUN NA)))
      (nM (nTop NUN))))
  (VP (ADJUNCT (ADV (DatADV (NP2 (NOUN HALMENI)))
                        (nAdDat EYKEY))))
      (ADJUNCT EMPTY)))
  (VI (NP (NP2 (NOUN SAKWA)))
      (nM (nObj LUL)))
      (Vt CU)))
  (vV (Tns (Past ESS))))))
(DS (SE (Dec-N TA))))
```

< Conceptual Representation >

```
(S (CL1 (PROCESS CU)
        (TOPIC (PHEAD NA))
        (PART1 (PHEAD NA))
        (PART2 (PHEAD SAKWA))
        (PART3 (PHEAD HALMENI))
        (Tense ESS)))
```

SEMIOTICS, LINGUISTICS, AND COMPUTER LANGUAGES

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1. The Problem

Artificial intelligence is the study of mental faculties by using computational models. Computational models are represented by programming languages. Most programming languages used in artificial intelligence are so called applicative (binary functional) programming languages. There are now more than a dozen applicative programming languages. The most prominent among them is Lisp.

Linguistics and artificial intelligence are obviously distinct areas of study. But one may advance strong arguments for the fruitfulness of cooperation between the two sciences. Recently Jean-Pierre Desclés has shown that there are significant structural similarities between Lisp and the genotype language of applicative grammar (Desclés, 1986). The reason for these similarities is that both applicative programming languages and the genotype language have the same origin--they are rooted in lambda-calculus and combinatory logic. Until recently combinatory logic was considered a purely theoretical discipline exploring the innermost depths of logic and mathematics but having no significance either for computer science or for linguistics. But now it has become clear that combinatory logic and lambda-calculus are essentially abstract programming languages that contain the idea of computation in a pure form independent of the syntactic complications of concrete programming languages. Both programming languages and linguistic models of natural languages can be defined in terms of combinators.

Desclés has suggested that the genotype language could be fruitfully studied in the wider context of applicative programming languages: both the genotype language and applicative programming languages are to be subsumed under the more inclusive class of applicative languages. This suggestion is important for applicative grammar. But it also raises a general problem of whether programming languages should become part of semiotic studies. In order to clarify this problem, let me say a few words about the subject matter of semiotics.

Semiotics is a science of sign systems. Sign systems are used for expressing thought and for communication. The main sign systems are natural languages-- the basic means of human communication. But we should not underestimate the significance of other sign systems, such as the languages of mathematics, physics, chemistry, biology, and other sciences. Neither should we underestimate iconic systems. In the last decades a new powerful medium of communication has evolved--programming languages for mainframe- and microcomputers. Programming languages for computers are bound to revolutionize human communication. Barthes used to say that we are a civilization of the written word. But nowadays we are not only a civilization of the written word but also a civilization of programming languages.

The computer revolution is not only a revolution in technology, but also a revolution in the way we think and in the way we express what we think. The construction of models of the world by computers is a special method of cognition which we may call computational epistemology.

A comparative study of the genotype language and applicative programming languages presents a new problem for semiotics: What are the specific features of the class of applicative languages as opposed to other types of sign systems? How does this class of sign-systems function in the process of cognition? Answers to these questions may throw new light on some crucial aspects of semiotic studies. These questions were posed in my recent book *A Semiotic Theory of Language* (Shaumyan, 1987: 279-86).

My recent programming of some essential parts of the genotype language in terms of Lisp has given some interesting results. I will publish my programs in a separate paper.¹

In what follows I will present some common essential features of Lisp and the genotype language which are of general interest for linguists and semioticians and which, I hope, may lead to new insights into the nature of natural languages and other semiotic systems.

2. Binary Hierarchy as a Syntactic Law

Lisp is an acronym for List Processor. The list is its basic syntactic unit, which is defined through the primitive notion *pair*. A pair is constructed with the primitive procedure **cons**. This procedure takes two arguments and returns a compound object that has the two arguments as parts. We can extract the parts using the primitive procedures **car** and **cdr** (pronounced "could-er"). Pairs are building blocks to create all sorts of compound syntactic structures. "The single compound-data primitive *pair*, implemented by the procedures **cons**, **car**, and **cdr**, is the only glue

we need. Data objects constructed from pairs are called *list-structured objects*" (Abelson and Sussman, 1985: 77).... "A sequence of pairs, formed by nested *conses*, is called a *list*." (Ibid. 90).

The procedure *cons* of LISP is a counterpart of the application operation of the genotype language. In the genotype language *application* is defined as follows: If *X* and *Y* are expressions, then (*XY*) is an expression.

The term "list" is an exact counterpart of the term "applicative expression" in the genotype language. *Applicative expression* is a sequence of expressions formed by applications.

In the above expression (*XY*) we interpret *X* as an operator and *Y* as an operand. In this way we can always represent an *n*-place operator as a one-place operator interpreted as an *n*-place operator that yields another one-place operator as its resultant interpreted as an (*n-1*)-place operator. As an example of representing an *n*-place operator as a one-place operator consider the following: The three-place operator *showed* is represented as a one-place operator that is applied to its operand *Mary* and yields the resultant (*showed Mary*). The resultant is a one-place operator interpreted as a (*3-1*)-place operator, which is applied to another term, *the picture*, and yields the resultant ((*showed Mary*) *the picture*). The new resultant is a one-place operator interpreted as a (*2-1*)-operator, which is applied to still another term, *John*, and yields the resultant

(1) (((*showed Mary*) *the picture*) *John*).

The last resultant is interpreted as a (*1-1*)-place operator, that is, a zero-place operator, which is a sentence. This sentence is an abstract representation of the sentence *John showed Mary the picture*.

In Lisp notation an abstract representation of the above sentence will be

(2) (*cons* (*cons* (*cons* 'showed 'Mary) 'the 'picture) 'John) ⇒
(((*showed Mary*) *the picture*) *John*)

The ⇒ reads "evaluates to." Single quotes in the left part of (2) indicate that the corresponding data are constants. The expression in the right part of (2) is called the value of the expression in the left part of (2).

Both in Lisp and the genotype language parentheses can be omitted under special rules, which are different in both languages: in Lisp parentheses are omitted under the rule of association to the right, but in the genotype language they are omitted under the rule of association to the left. In addition, external parentheses cannot be omitted in Lisp. Thus in (*a (b (c (d e)))*)

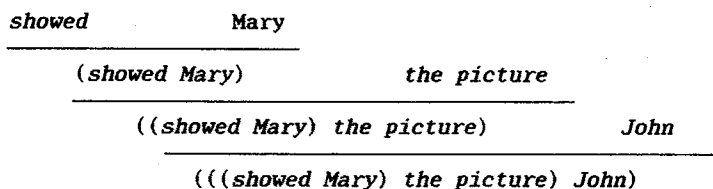
internal parentheses cannot be omitted in the genotype language, but can be omitted in Lisp, where we may have *(a b c d e)*. In the genotype language we can have only *a (b (c (d e)))* due to the possible omission of the external parentheses. On the contrary, in *((((a b) c) d) e)* parentheses cannot be omitted in LISP, but can be omitted in the genotype language, where we may have *a b c d e*.

By comparing Lisp notation and the genotype notation we see that the same procedure is designated by **cons** in LISP and by the juxtaposition of expressions in the genotype language.

Pairs enable us to represent hierarchical structures--structures made up of parts, which themselves are made of parts, and so on.

Let us now turn to the analysis of applicative expressions in the genotype language. The analysis of these expressions is presented by *applicative trees*. The tree for (1) will be

(3)



In order to analyze (1) in Lisp we must use the procedures **car** and **cdr**. The procedure **car** selects the first item in the list, and **cdr** selects the sublist consisting of all but the first item (which also can be a sublist). Thus we get the following analysis of (1):

- (4)
- a. **(car (cons (cons (cons 'showed 'Mary) 'the 'picture) 'John))** $\Rightarrow$ *((showed Mary) the picture)*
 - b. **(cdr (cons (cons (cons 'showed 'Mary) 'the 'picture)) 'John)** $\Rightarrow$ *John*
 - c. **(car (car (cons (cons (cons 'showed 'Mary) 'the 'picture) 'John)))** $\Rightarrow$ *(showed Mary)*
 - d. **(car (car (car (cons (cons (cons 'showed 'Mary) 'the 'picture) 'John))))** $\Rightarrow$ *showed*
 - e. **(cdr (car (car (cons (cons (cons 'showed 'Mary) 'the 'picture) 'John))))** $\Rightarrow$ *Mary*

The above comparison of Lisp and the genotype language shows that the binary hierarchy is an essential aspect of the syntax of

both languages. What is the meaning of the binary syntactic hierarchy? The binary syntactic hierarchy supports *currying*, that is, reducing functions of many arguments to functions of a single argument (the term "currying" is derived from the name of Curry, the founder of combinatory logic). To quote Rosser:

A program in a computer is a function of a single argument. People who have not considered the matter carefully may think, when they write a subroutine to add two numbers, that they have produced a program that is a function of two arguments. But what happens when the program begins to run, to produce the sum $A + B$? First A is brought from memory. Suppose that at that time the computer is completely halted. What remains in the computer is a program, to be applied to any B that might be forthcoming, to produce the sum of the given A and the forthcoming B . It is a function of one argument, depending on the given A , to be applied to any B , to produce the sum $A + B$. (Rosser, 1984: 337-38).

What does the binary syntactic hierarchy mean for linguistics?

As I showed in my recent publications (Shaumyan, 1985, 1987), the binary syntactic hierarchy enables the linguist to integrate constituency grammar and dependency grammar into a single system based on the relations of the type "operator - operand". A network of binary relations of the type "operator - operand" I call applicative structure. The notion of applicative structure provides a framework for dealing precisely with the concepts of universal grammar and language typology. Binary relations are ultimate universal relations to which other relations must be reduced. The genotype language must be viewed as a metalanguage with respect to other formal languages of contemporary theoretical linguistics. Using the genotype language, we analyze linguistic concepts and reduce them to their ultimate constituents.

3. Combinators as Abstract Operators

In logic combinators are operators that combine primitive logical concepts in all possible ways by repeated use of the application operation. Primitive logical concepts together with combinators form a class of concepts to which belong all logical concepts with which we deal. Furthermore combinators can be used and are used in mathematics to combine primitive mathematical concepts. Having studied combinatory logic, I have found that combinators can be used also in linguistics. Actually, combinators are completely abstract, that is, their use does not depend on a particular subject matter. By introducing combinators into linguistics we do not introduce logic into linguistics, but only use

these abstract entities for posing and solving purely linguistic problems. To define a class of primitive linguistic concepts to which all other linguistic concepts can be reduced is a real challenge, and combinators are a necessary means to this end.²

Combinators can be represented by the so-called *reduction rules*, which have the form

$$(5) \quad X \triangleright Y$$

The infix $\triangleright$ designates the reduction relation. (5) reads: "X reduces to Y." Here are a few examples of combinators.

Combinator **W** is called the *duplicator*. If R is a two-place relation, then WR is a one-place relation associated with the relation R by the reduction rule

$$(6) \quad WRX \triangleright RXX$$

One possible use of the duplicator **W** is in conjunction with the coreferentiality relation. Let the formula P_2TT be interpreted as *John shaves himself*; then the formula WP_2T must be interpreted as *John shaves*. As a part of the formula WP_2T , the term T must be interpreted as a combination of primary and secondary terms: in *John shaves*, *John* is both the agent and the patient of the predicate *shaves*.³

The combinator **B** is called the *compositor*. It enables us to combine two operators F and G into a complex operator designated by BFG . The combinator **B** is defined by the following rule:

$$(7) \quad (BFG)X \triangleright F(GX)$$

Like other combinators, **B** can have different important uses on the linguistic level. One possible use is this: **B** can be thought of as an operator that combines two predicates into a construction of the type "accusative + infinitive." Consider the sentence *He saw the man leave*. It is reasonable to assume that *saw* and *leave* are discrete components of a complex predicate **saw-leave*, which syntactically corresponds to the two simple predicates in *He saw [that] the man leaves*. If F and G are interpreted as simple predicates, then BFG must be interpreted as the corresponding complex predicate.

Lisp does not have combinators, but they, and other objects, can easily be defined in it. In LISP notation the rules (6) and (7) must have the form of procedures that are defined as follows:

$$(8) \quad (\text{define } ((W R) X)) \quad (\text{cons } (\text{cons } R X) X)$$

$$(9) \quad (\text{define } ((B F G) X)) \quad (\text{cons } F (\text{cons } G X))$$

Having defined these procedures, we can apply them to processing concrete expressions.⁴ For example,

- (10) a. $((W 'p)'t) \Rightarrow (('p 't)'t)$
 b. $((B 'p 'q)'t) \Rightarrow ('p ('q 't))$

We type in the expressions shown on the left of the arrow, and the computer returns the expressions shown on the right. The symbols 'p and 'q designate predicate constants and the symbol 't designates a term constant.

In order to define and process combinators and other linguistic concepts in Lisp, we use *metalinguistic abstraction*--the establishment of new descriptive languages. Lisp is particularly well suited to this task because of its flexibility in manipulating symbolic expressions (for the technology of metalinguistic abstraction see Abelson and Sussman, 1985: 293-382). In our case, our goal is to establish a new descriptive language that I call the *computerized genotype language*.

4. Binary Relations in Semantics and Representation of Knowledge

Binary relations are no less important in semantics than in syntax. Binary semantic hierarchy is a counterpart of binary syntactic hierarchy. In order to construct an effective semantic system, we have to define a class of primitive semantic concepts to which all other semantic concepts can be reduced. This must be done by the use of combinators.

What concepts must be considered semantic primitives? Under the hypothesis in my book *Applicational Grammar as a Semantic Theory of Natural Language* (Shaumyan, 1977) the reasonable candidates for semantic primitives are some basic localistic concepts. I have constructed a semantic system in which four localistic concepts are taken as semantic primitives: the moving point, the starting point, the end point, and the point crossed by the moving point on its path. By means of these four localistic semantic primitives I define 24 binary localistic relations called *relators*. Relators have the form R_{xy} where xy are subscript variables for which symbols designating semantic primitives are substituted. Using relators, I construct primitive expressions called *semantic axioms*. Semantic axioms are constructed according to rules called *axiom schemes*. All other expressions are derived from semantic axioms by means of *semantic rules*, which are defined through the use of combinators.

Semantic axioms and expressions derived from them are not only abstract analogues of expressions in natural languages but they can also be thought of as conceptual schemes for representing

knowledge. Because of their binary structure they are particularly suitable for computer implementation. Limitations of space preclude the presentation here of an outline of my semantic system, and I refer the interested reader to the above book. As to the computer implementation of binary semantic structures for representing knowledge, I will discuss this subject in a separate publication.

Recently Desclés published an important study on the representation of knowledge in the framework of applicative languages, which presents a semantic system related to the above system (Desclés, 1985). He uses the notions of general topology and introduces a concept which he calls *cognitive archetypes*. The cognitive archetype is a binary structure that denotes a situation in a way independent of linguistic manifestation. The archetypes are divided into static and dynamic. This distinction is analogous to the distinction between inactive and active constructions in linguistics. There are two types of static situations: situations characterized by the attribution of properties to objects and situations characterized by spatial and temporal localization. In order to characterize localization, Desclés uses concepts of general topology and introduces the concept of the *topological archetype*. Topological archetypes involve various types of relators. Desclés presents a detailed typology of cognitive archetypes, which I cannot describe here because of limitations of space. I refer the reader to the work of Desclés.

The notion of the binary syntactic hierarchy raises a general semiotic problem: How far can various symbolic and iconic systems be reduced to binary relations? The semiotic theory of natural languages presented in my books mentioned above claims that both the grammatical and the phonological structure of any language of the world can be reduced to binary relations. This is, of course, a hypothesis that needs further testing. But how about other semiotic systems? We have to explore their reducibility to binary relations.

If the applicative structure hypothesis is valid, a question arises: Can we have computer designs of grammars which are conceptually interesting for a linguist? Attempts at computer implementations of grammars are not new. On the contrary, there are already a lot of parsers and other syntactic and semantic computer programs. Moreover, there already exists a branch of artificial intelligence called computational linguistics. But most of these programs are not interesting for theoretical linguistics because they lack proper conceptual motivation. By a proper conceptual motivation of a linguistic computer program I mean the construction of a computer model closely simulating processes in the original model rather than being a purely mechanistic device for generating or analyzing sentences. As I showed elsewhere, an efficient mechanistic device is not necessarily a theoretically valid simulation of the linguistic structure (Shaumyan, 1987: 27-30).

A linguistic computer program interesting for a theoretician must have a revealing conceptual structure; such a program would be a precious instrument for testing the original linguistic model. I think attempts at a conceptually revealing computer version of applicative grammar will be promising.

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NOTES

1. Since its inception in 1960 Lisp has evolved into a number of dialects.

I write my programs in a dialect of Lisp called Scheme. Scheme was designed in 1975 by Gerald J. Sussman and Guy L. Steel, Jr. Scheme is described in Abelson and Sussman, 1985, Dybig, 1987, and in some other publications. Scheme is similar to another dialect of Lisp, called Common Lisp. The differences between the two dialects make Scheme more suitable for system design and research and make Common Lisp more suitable for large-scale production systems. Scheme is particularly effective for symbolic computing on personal computers, where full implementations of Common Lisp are not very efficient.

2. A detailed description of combinators from a linguistic point of view is given in my book mentioned above and in Desclés, 1986. Very readable nontechnical introductions to combinators in logic are given in Smullyan, 1985 and in Schönfinkel, 1924--the first exposition of combinators by the man who invented them. The fundamental works on combinatory logic are by Curry and Feys, 1958, Curry and al., 1972, Hindley and Seldin, 1986.

3. Here I present a simplified account of reflexivization that is sufficient for the present paper. For a detailed analysis of the complexities of reflexivization, which involves a more complex presentation of this process, and for a detailed description of the application of combinators to the solution of other linguistic problems, see Shaumyan, 1987; Desclés, 1985; Desclés, Guentchéva, Shaumyan, 1985, 1986.

4. In some Lisp dialects **define** is expressed by **def** or **defun**. Common Lisp uses **defun**.

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